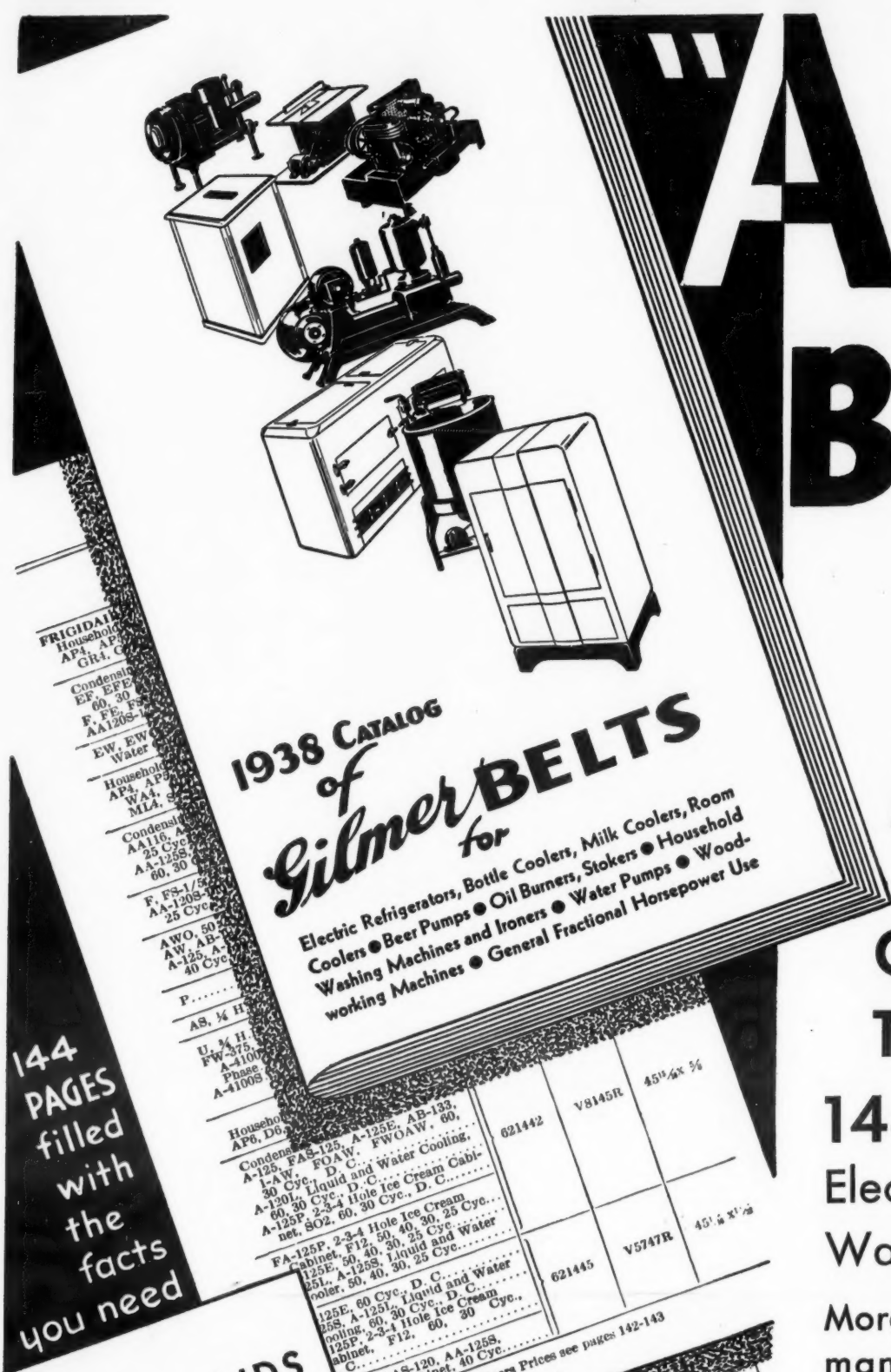


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Condensing Unit, Part No.		Model	Mfr. Part No.	Belt Number	Size Outside Circumference
KELVINATOR-Continued					
4075-30, 40, 25 cye.			5352	V5811R	34 3/4 x 3/4
4077-40			5163	V5843R	33 3/4 x 3/4
4077-40			5352	V5811R	34 3/4 x 3/4
4078-123			11057	V5489R	94 x 3/4
4079-50, 40, 25 cye.			5163	V5843R	33 3/4 x 3/4
4079-50, 40, 25 cye.			5352	V5811R	34 3/4 x 3/4
4080-40			5163	V5843R	33 3/4 x 3/4
4080-40			5352	V5811R	34 3/4 x 3/4
4081-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
4081-40, 25 cye.			5352	V5811R	34 3/4 x 3/4
4082-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
4082-40, 25 cye.			5352	V5811R	34 3/4 x 3/4
4083-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
4083-40, 25 cye.			5352	V5811R	34 3/4 x 3/4
4084-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
4084-40, 25 cye.			5352	V5811R	34 3/4 x 3/4
4085-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
4085-40, 25 cye.			5352	V5811R	34 3/4 x 3/4
4086-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
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4087-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
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4088-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
4088-40, 25 cye.			5352	V5811R	34 3/4 x 3/4
4089-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
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4107-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
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4108-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
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4110-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
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4111-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
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4170-40, 25 cye.			5352	V5811R	34 3/4 x 3/4
4171-40, 25 cye.			5163	V5843R	33 3/4 x 3/4
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Air Conditioning & Refrigeration News

The Newspaper of the Industry

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THE COLD CANVASS

By B. T. Umore

Meet Jimmy Hatlo

Not since the heyday of Clare Briggs has any cartoonist caught the humor of everyday life so well as Jimmy Hatlo, whose "They'll Do It Every Time" series is, in our opinion, the funniest cartoon comedy extant.

What's more, Hatlo is probably the first cartoonist to see the humor in business. His lampooning of the little anomalies that show up in every office and store, and his caricatures of typical male faces, are classics.

Beginning with this issue (see page 10) Jimmy Hatlo's cartoons will appear regularly in the NEWS.

Little Drops Of Water

"Little drops of water . . . make the mighty ocean," as the old jingle has it—but it depends a lot on where you find the drops. When collectors for the Palo Alto (Calif.) telephone company collected nothing but these little drops of water from pay stations in Stanford university fraternity houses, for example, it just made them mighty mad.

It developed that an electric refrigerator was back of all the trouble. In an effort to make their nickels go farther, students had been pouring water into plaster-of-paris moulds, placing these in the refrigerator's ice compartment, and using the ice-discs thus obtained in place of nickels in making telephone calls.

Of course, none of the boys had any idea who was responsible for this somewhat novel method of currency expansion, but telephone company heads threatened to pull out the pay phones if the students didn't quit using them as the means of "liquidating" their "frozen assets."

Refrigerating the Hula

Every Hawaiian hula tells a story all its own, they say. If that's the case, refrigeration might well be blamed for causing Princess Kuulei, Hawaiian hula star, to tell a sort of a fib on her first dancing appearance in this country.

It seems that the wreathes of flowers Princess Kuulei was to wear in her dance were kept fresh all day in a refrigerator. When she put them on, that night, they were ice-cold.

So she did her hula with a shiver, probably violating all the antique hula traditions. But this column can suggest a way out to the Princess, if she needs an explanation when she gets back to the Islands and home.

She could tell the natives she was interpreting refrigeration as a modern part of American life. Then again, she might also pass it off as the sensations of the average Detroit as he waits for that beautiful day that is spring in these parts.

How the Donkey Became an Ass

Once upon a time a great prophet addressed a herd of donkeys. What would a donkey require for a three-day journey?" he asked.

"Six bundles of hay and three bags of dates," they replied.

"That soundeth like a fair price, but I have for only one of you a three-day journey, and I cannot give six bundles of hay and three bags of dates. Who will go for less?"

Behold, all stood forth. One would go for six bundles of hay and two bags of dates, another for three bundles and one bag. One especially long-eared donkey agreed to go for one bundle of hay.

Spake the prophet: "Thou art a disgrace to thy herd, and an ass."

(Concluded on Page 2, Column 5)

Week's Program Is Planned For Spring A.S.R.E. Conclave

STATE COLLEGE, Pa.—Discussions of both industrial and food refrigeration problems are included in the tentative list of technical papers to be presented at the twenty-fifth summer meeting of American Society of Refrigerating Engineers and the Foods Conference which the society is sponsoring in cooperation with Pennsylvania State College here June 19 to 24, inclusive.

Technical sessions of A.S.R.E. will be held on June 20 and 21 in the Nittany Lion Inn here, with meetings of the A.S.R.E. Council and the various committees scheduled for June 19. The Foods Conference will open on June 21 and continue through June 24.

Tentative program for the first technical session on June 20 includes papers on "Copper Plating of Refrigerating Compressors," by E. J. McGovern, R. & H. Chemicals Dept., E. I. du Pont de Nemours & Co., Wilmington, Del.; "Farm Chemurgy," by Dr. Harry C. Barnard, New York City; and "From Ice to Salt in Liquid Helium," by Dr. J. G. Ashton, State College.

Program for June 21 lists papers on "Refrigeration in Brewing," by

(Concluded on Page 8, Column 1)

Westinghouse Plant In East To House Commercial Lines

EAST SPRINGFIELD, Mass.—Construction of two huge buildings costing a million dollars, which will add more than 300,000 sq. ft. of floor area to present facilities, is under way at Westinghouse Electric & Mfg. Co.'s plant here.

This building will house the manufacture of beverage coolers, water coolers, and commercial refrigeration. Sheet steel will be unloaded within the north end of the building direct from freight cars. It will be delivered to fabricating points by an overhead traveling crane which operates throughout the first 350 feet of the center bay at the north end.

Mayor Roger L. Putnam of Springfield, and other municipal, chamber of commerce, and Westinghouse officials took part in ground-breaking ceremonies inaugurating construction work on the new buildings. They are to be ready for occupancy by July 15.

The new buildings include a manufacturing building 942 feet long by

(Concluded on Page 20, Column 1)

Court Rules Out Minn. Trade Practices Act

MINNEAPOLIS—Minnesota's 1937 fair trade practices act, prohibiting sale of merchandise at less than 10% above the manufacturer's list price, and designed to eliminate use of "loss leaders" and other practices designed to destroy competition in retail trade, was held unconstitutional by a three-judge federal court here April 30.

The decision is to be appealed to the United States Supreme Court for a final determination of the act's validity.

Not affected by the court's ruling is another act—termed the fair trade act—which legalizes vertical price control by permitting a manufacturer to contract to fix the prices at which successive middlemen or distributors, including retailers, may both buy and sell his merchandise.

The decision was returned in a suit by the Great Atlantic & Pacific

(Concluded on Page 8, Column 5)

Unit Coolers Are Latest American Radiator Item

Self-Contained Commercial Conditioners To 5 Hp. Are Announced

NEW YORK CITY—Entrance of the American Radiator & Standard Sanitary Mfg. Corp. into the commercial air-conditioning market, through a subsidiary company, Standard Air Conditioning, Inc., is indicated by the announcement of self-contained 2, 3, and 5-hp. conditioners, together with a room cooler unit having a capacity of 9,050 B.t.u. hourly.

The only division of American Radiator ever to sell at retail, Standard Air Conditioning, Inc., is concentrating on the replacement and existing building market. Beginning with the "Air Pilot" window ventilator unit, having a capacity of 500 c.f.m. and the basement type "Arco" humidifier, which is also sold through the heating trade, the company has broadened its line of conditioning equipment to a point where all types of ventilating and commercial air-conditioning systems may be installed.

Feature unit of the line is the model 559 room cooler, which has a

(Concluded on Page 20, Column 2)

'Cut Building Cost First To Help Conditioning' Architect Suggests

ANN ARBOR, Mich.—"Costs of small houses must be lowered before there is a market for heating and air-conditioning plants in them," declared Ivan Cuthbert, architect, speaking before the Second Annual Coal Utilization Institute, held May 3 at the University of Michigan Union.

Discussing the application of solid fuels to winter air conditioning in small residences, Mr. Cuthbert pointed out that at no time since the World War has it been possible to design and build a small house that the average worker can buy and pay for.

Assuming that a small house must be purchased by a family having an income of approximately \$1,000 a year, Mr. Cuthbert asserted that such a structure is out of the ques-

(Concluded on Page 8, Column 4)

Refrigerator Saving Is Theme of Drive In N. California

SAN FRANCISCO—Featuring the same slogan used last year, "It Pays for Itself, Then Pays You," the Electric Appliance Society of Northern California, in cooperation with Pacific Gas & Electric Co., has launched an intensive campaign on electric refrigeration running between April 21 and May 21.

An Eskimo and Penguin motif has been worked out as the advertising illustration theme. This is being used in a P. G. & E. sponsored billboard campaign, in 500,000 stickers in the company's statements, in miniature billboards for window and interior display, and in posters and newspaper advertising.

Extensive radio spot announcements are being used, and there is a major prize contest for window display and advertising men. Free mat service and publicity clipping sheet materials are available for use in local newspaper sections.

The society has aimed its 1938 campaign at the low-income market, and has planned the drive on the theory that people in these brackets can be sold successfully only if they can be shown definitely that the purchase of an electric refrigerator will actually save money. With little, if any, extra money to spend, low-income prospects are interested in an electric refrigerator only as an investment which will save from living expenses enough to pay for itself, and yield an additional return, the society believes.

As the keynote of this year's drive, a "Here's How an Electric Refrigerator Pays for Itself and Then Pays

(Concluded on Page 2, Column 3)

Salesman's Trips Out To Kitchen During Banquet Result In a Sale

EAU CLAIRE, Wis.—When there's business to be had, such routine things as eating and sleeping apparently mean nothing at all to Frank Novetchek, refrigerator salesman for National Coal Co. here.

During a recent banquet given here for visiting Servel Electrolux dealers and salesmen by F. C. Hayer Co., Servel distributor in Minneapolis, Mr. Novetchek made himself conspicuous by going out to the kitchen several times during the meal.

Finally, when dessert was being served, he proudly displayed a signed contract as evidence that he had

(Concluded on Page 2, Column 5)

Parts Show May Be Extended To Entire Industry

Plans for 1939 Exhibit To Be Discussed At Meeting Monday

CHICAGO—A special membership meeting of Refrigeration Supplies & Parts Manufacturers Association will be held next Monday (May 16) at 10:30 a.m. Chicago time, in the bungalow on the tower of the Morrison hotel here, announces J. D. Colyer, president of the association.

Because of the long interval existing between the 1937 meeting, held last November, and the next regular convention, scheduled for mid-January 1939, next week's meeting has been called, in part, to give members an opportunity to consider several organization and industry matters that otherwise would not come up for action before next year, Mr. Colyer said.

In addition, members will discuss plans and arrangements proposed by their exhibits committee for the industry exhibit the parts manufacturers' association is sponsoring during the week of Jan. 16, 1939. Replying to a recent questionnaire sent out by the committee, association members indicated that they are interested in opening the exhibit to all classes of trade in the refrigeration and air-conditioning field to which they and their distribution outlets sell.

Policies covering such questions as eligibility for participation in the exhibit, arrangements for handling the different types of attendants to be invited, and formulation of official rules and regulations for exhibitors will be determined at next week's meeting.

It is possible also that members will be given the privilege of selecting their booth spaces at this time, instead of having spaces assigned to them later.

Atlanta Dealers Get New Trade-In Code

By James McCallum Jr.

ATLANTA—Most of the electric refrigerator dealers and distributors in this territory who are members of the Atlanta Electrical Association already have agreed to operate during the current year under terms of the association's revised code of merchandising ethics, according to L. L. Austin, executive secretary.

Although pointing out that the agreement would not become technically effective until signed by all outlets in this vicinity, Mr. Austin declared that for all practical purposes the code is in effect at the present time.

Provisions of the revamped code, changed only slightly from the one used last year, follow:

1. Where the dealer finds it necessary to make an allowance for an ice box which the customer wishes to trade in on a current model, such allowance shall be limited to a maximum of 5% of the cash installed price of the electric refrigerator being sold.

2. Trade-ins on used electric refrigerators shall be limited to an allowance that will enable the dealer to take his regular mark-up upon reconditioning and selling the refrigerator traded in.

3. Minimum terms and carrying charges shall be those in effect under the E.H. & F.A. plan, with the exception of minimum down payment, which shall be \$5.00 or 5% of the cash installed price, whichever is greater. Dealers having old customers

(Concluded on Page 2, Column 1)

To Sell Refrigerators In California



Eskimo and Penguins combine to tell how an electric refrigerator "Pays For Itself, Then Pays You" in the window display piece of this year's refrigerator campaign by Electric Appliance Society of Northern California. Wise-looking penguin on the left-hand card waves a copy of the "Pass Book to Food Savings," while the other penguin points his beak towards the "Here's How" message showing figures compiled in a nation-wide survey on savings to electric refrigerator owners.

Atlanta Dealer Pact Covers Premiums, Service Charge, Guarantee Interpretation

(Concluded from Page 1, Column 5)

on their books with satisfactory credit experience may sell refrigerators to such customers without down payment. Refrigerators sold on terms of 60 days shall be considered cash sales.

4. Salesmen shall be forbidden to split commissions with their customers.

5. No premiums or extra equipment shall be given to the customer as an inducement to purchase an electric refrigerator, unless the manufacturer is putting on a sales promotion campaign involving the use of premiums, which campaign is open to all dealers handling that make of refrigerator. This does not apply to the giving of prizes for furnishing the names of prospects.

SERVICE CALLS CHARGE

6. Except in those cases where factory policy on replacement parts provides otherwise, a service charge shall be made for each call after the refrigerator has been out one year or more; minimum charge for such service calls to be \$1.50.

7. Each customer shall be given a clear understanding at the time of purchasing an electric refrigerator of the exact meaning of the long term guarantees which the manufacturers have in effect.

8. This agreement shall be null and void unless signed by all electric refrigerator dealers and distributors in the Atlanta territory. It may also

be voided or changed at any time by a two-thirds vote of those signing it.

Unlike many groups of this type, Atlanta Electrical Association not only includes refrigerator distributors in its roster, but it actually depends upon these distributors to "police" the association's retail merchandising agreement.

Mr. Austin reported that for the most part distributors have been very cooperative in assisting the association with the formation and maintenance of its trade agreement, and have been instrumental in bringing certain backsliding retailers into line.

DEALERS TOP OFFICERS

Membership is composed of both retailers and wholesalers, but both president and vice president must be retailers. These officers, together with an honorary secretary-treasurer and seven directors, constitute the association's 10-man governing board. At least six members of this board must be retailers.

A. E. Foster, first president of Atlanta Radio Association and active in the organization's activities ever since, has been elected an honorary life member of the board.

Association officers for the current year are: Howard J. Wilson, Davison-Paxon Co., president; L. G. Fulton, Fulton Bros. Electric Co., vice president; James F. Gordy, Beck & Gregg Hardware Co., honorary secretary.

'Pass Book To Savings' Key Part Of Northern California Sales Drive

(Concluded from Page 1, Column 4)

You" slant is carried out in all newspaper, billboard, radio, and direct-mail advertising, as well as in window displays.

The food savings story which all dealers are telling during the drive is based on the average savings shown by refrigerator owners in a recent nation-wide survey. It shows:

60 cents weekly by preventing food losses.

50 cents weekly by buying food bargain specials.

62 cents weekly by quantity buying.

78 cents weekly by reducing refrigeration costs.

Total \$2.53 a week, or \$10.96 a month saved by electric refrigeration.

UNIFIED SAVINGS STORY

Object of the campaign is to have all retail outlets telling this story at the same time, and pointing out, for the benefit of low-income prospects, that these savings are "more than enough to meet the small monthly payments."

As a give-away piece to be used during the drive, the society has prepared a "pass book to food savings," in which the "savings story" is set forth, as shown above.

Newspaper advertising supporting the campaign is appearing in approximately 250 newspapers scattered throughout the society's territory. The Eskimo and Penguin theme is

used. Four advertisements will be used in each of the 250 cities during the drive, one each week. Local dealers may decide which day of the week the advertisements are to run. Advertisements in daily papers will be 3 columns by 15 inches; in weeklies, 2 columns by 10 inches.

Some 300 billboards throughout the territory are being used during the drive, to keep the "Pays for Itself, Then Pays You" story before prospects in all major market areas.

Commercial announcements on the "California Tales" program sponsored by the utility company are being turned over to featuring the electric refrigerator drive on four Sunday nights during the campaign. A series of 200 spot announcements also will be used at popular day and night periods immediately preceding or following programs with definite radio audiences.

Special window sets have been prepared for dealer use. In three pieces, these sets tell the "savings" theme story quickly and completely. In connection with the drive, \$240 in cash prizes is being offered in a window display contest.

WINDOW DISPLAY RULES

To qualify for one of the awards, which have been divided into three districts, windows must (1) be installed for at least one week during the present campaign; (2) use one or more of the society's display pieces described above. Effectiveness in attracting and holding attention, originality, sales appeal, arrangement, color, and adherence to the society's rules will be considered in making the awards.

Additional support being given the campaign by Pacific Gas & Electric Co. includes, in addition to the 500,000 stickers featuring the drive on monthly electric bills, display cards on utility trucks and service wagons, and a contest for housewives conducted through the utility's publication, "Progress," which is distributed to all company customers.

Founded four years ago, the Electric Appliance Society has a membership of thousands of appliance dealers throughout P. G. & E. territory. Last year the utility spent \$118,448 in four appliance campaigns, including refrigeration, ironers, radios, and a Christmas drive on small appliances.

Results of the refrigerator drives are indicated in the following sales figures for the past three years:

1937—49,769 units; 1936—47,029 units; 1935—38,084 units.

Officers of the association are: L. J. Breuner, of John Breuner Co. (furniture), president; Newton J. Hale, of Hale Bros. (department), vice president; H. M. Crawford, general sales manager of P. G. & E., secretary; S. W. Newman, of Chas. Brown & Sons (hardware), treasurer; and B. W. Reynolds, in charge of dealer sales for P. G. & E., promotion director.

Promotional job is handled by Jean Scott Frickelton, advertising manager of the society.

THE COLD CANVASS

By B. T. Umore

(Concluded from Page 1, Column 1)

Thou canst not live for three days on one bundle of hay, much less undertake the journey and profit thereby."

"True," replied the ass, hanging his long ears in shame, "but I wanted to get the business."

Purifying the Air

In the movie "Love and Hisses," Walter Winchell is taking an anxious father on the round of night clubs to look for the latter's daughter. They've visited umpteen spots without success.

"Let's try the Club Casino," says Winchell. "Ben Bernie works there—but it's all right, the place is air conditioned."

This Is No Bull

And now comes news from Texas about the prize bull which is riding around to exhibitions in an air-conditioned trailer.

Edsel Ford likes the idea, we hear, and is interested in obtaining an air-conditioned trailer for the use of show horses.

But Hugh North, Kelvinman from Kalamazoo, Michigan, has the best yarn of them all. Hugh tells about a stable he air conditioned to keep a woman's pet equine comfortable.

Salesman Shuns Sleep, Food, To Get Orders

(Concluded from Page 1, Column 4)

succeeded in selling the chef an Electrolux refrigerator.

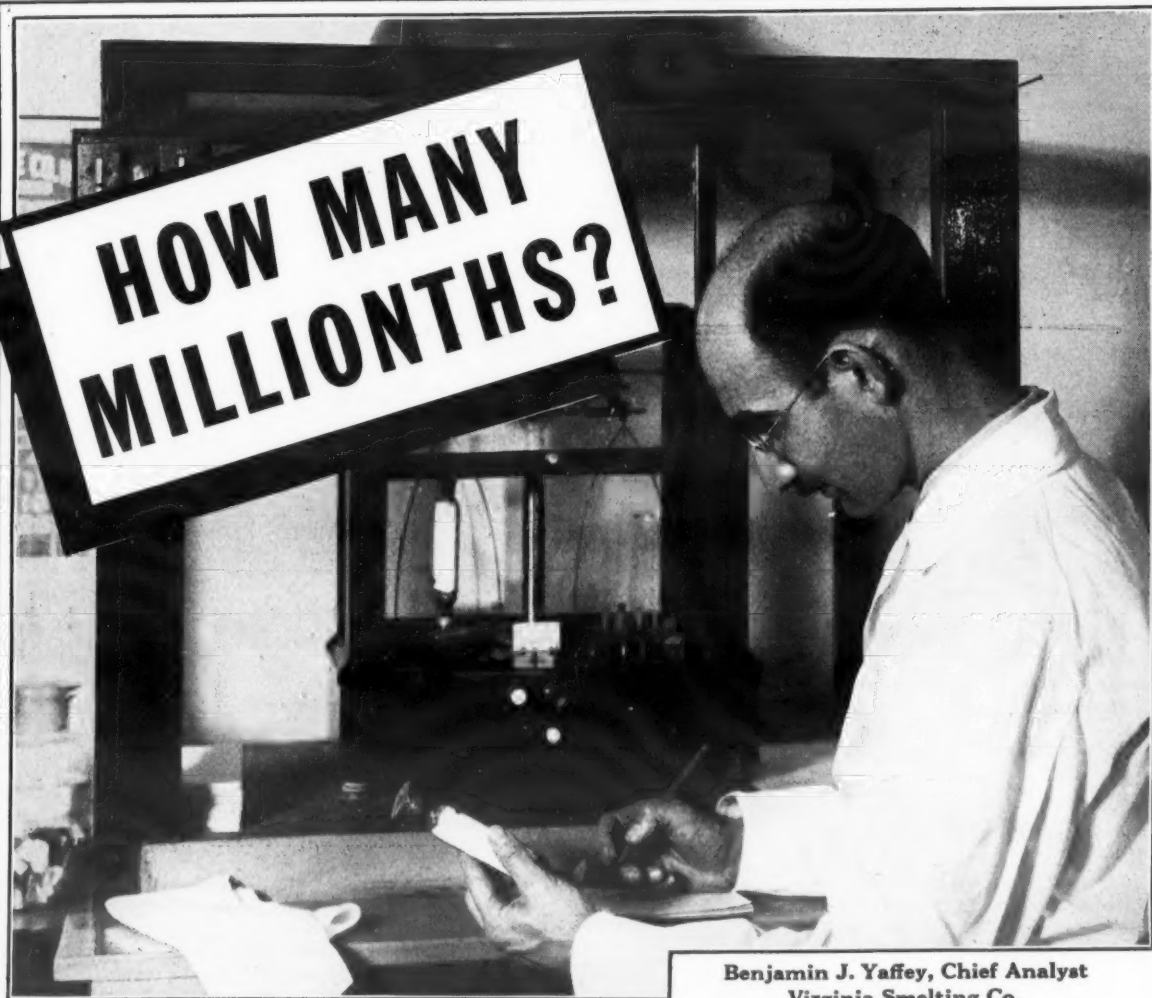
Mr. Novetchek had been after the sale for about a year. He made his first contact with the hotel chef some 12 months before during a similar banquet, and kept plugging with periodic call-backs until he succeeded in getting the order signed.

Another sale which Mr. Novetchek closed after unusual effort was one he made to a farmer near Eau Claire. One winter afternoon, Mr. Novetchek received from this farmer a coupon clipped from one of Servel's national farm journal advertisements.

Next morning he went out to the farm, arriving at 5 o'clock when the farmer was still in bed. He waited until the prospect got up, helped him with the milking, and then had breakfast with him. During the meal, Mr. Novetchek talked refrigeration, and when the meal was over he got a signed order, and a down payment of \$87.50.

Mr. Novetchek has been selling Electrolux refrigerators for only two years, and last year made 47 sales, 18 of them in November and December—when the weather in this part of the country is cold enough to put automatic refrigeration out of the minds of most people.

HOW MANY MILLIONTHS?



Benjamin J. Yaffey, Chief Analyst
Virginia Smelting Co.

ACCURACY THAT MEANS MORE MONEY FOR YOU

Never does a cylinder, drum, or tank-car of Extra Dry Esotoo leave Virginia Smelting Co. without the stamp of approval of Benjamin J. Yaffey and his staff of skilled technicians. Mr. Yaffey has supervised this extremely delicate work for more than eleven years, and has analyzed hundreds of thousands of samples during this time.

As an indication of how exacting our technical staff is in its work, the weight of the moisture measured in a typical one-third-pound sample of Extra Dry Esotoo is equal to a little square, this size, of "Air Conditioning and Refrigeration News" paper. Its weight, without ink, is .0022 grams, or 77 millionths of an ounce!

Such accuracy and care in maintaining the purity and dependability of the Virginia Quality Line of Refrigerants assures you of customer satisfaction and repeat-business.


VIRGINIA SMELTING CO. WEST NORFOLK, VA.




AEROCAR

Sales Coaches

Whatever your requirements, from a utility trailer to a custom-built sales coach, Aerocar can fill your needs exactly. Its designing and engineering superiority have made Aerocar America's largest commercial trailer builder. Write for catalog B today!

AEROCAR COMPANY OF DETROIT

4815 Cabot Ave. Detroit, Michigan

NEW PRODUCTS FOR NEW APPLICATIONS

Wherever it is desired to reduce heat or humidity there is a



Write for information covering the complete GR-Lipman line.
GENERAL REFRIGERATION CORPORATION
Dept. F-4, Beloit, Wisconsin, U.S.A.

THE INDUSTRY'S DOMINANT LINE

THE ECON-O-LINE
Econ-O-Cases, Econ-O-Misers, Econ-O-Coolers made by Koch in newly equipped metal plant. Welded steel, lifetime construction. Finished in porcelain or high-baked Dulux. Mass production makes prices competitive with the lowest.

WELDED
STEEL

DOUBLE BARREL DISTRIBUTOR PROPOSITION
Koch Distributors make double profits because they handle a truly complete line of equipment. The valuable Koch franchise is still available in certain territories to alert, aggressive distributors. If Koch is not represented in your territory, write TODAY for information. Only KOCH offers all these advantages. Check them!
✓ TIME-PAYMENT PLAN
✓ LAY-OUT SERVICE
✓ NATIONAL ADVERTISING
✓ LABORATORY TESTING
✓ PREPAID FREIGHT
✓ COMPLETE LINE

STANDARD
EQUIPMENT

THE STANDARD LINE
Display cases, coolers, refrigerators for markets, institutions, florists, bakers—all commercial applications. Special-built equipment of all types. Koch has manufactured refrigerators since 1883. Koch refrigerators are sold all over the world.

ONLY KOCH CAN GIVE YOU BOTH

KOCH REFRIGERATORS

NORTH KANSAS CITY, MO.

Profitable Sales Ideas

Selling 'Confidence' In Product & Dealer Overcomes Competition Of Lower Prices

EASTON, Pa.—"Selling 'confidence' is the simplest way to break down sales resistance," declares J. E. Morrison, owner of Morrison Electric Co. here, basing his opinion on experience during the past 10 years, in which time he says he has sold more than half a million dollars worth of electric refrigeration.

"In any line of business," says Mr. Morrison, "one of the requisites for successful selling is to have a good product and back it up with good service. But merely to have a good product will not of itself build a successful business."

SELL 'CONFIDENCE'

"The product must be properly promoted by means of selling technique that will overcome price competition and build customer confidence."

"When first we began to merchandise electric refrigeration, we soon discovered that the simplest way to break down sales resistance is to sell 'confidence.' This was particularly true in our case at the time, because the line we were selling was priced considerably higher than any competitive line." Mr. Morrison re-

lates that after failing to close a few sales by attempting to sell on the value of the product alone, he and his salesmen realized that they would have to create confidence in the company before prospects would pay a higher price or buy from them in preference to another store.

"When a prospect comes into the store, we do not immediately begin the interview by showing the units on the floor," Mr. Morrison explains, in describing his company's present method of selling confidence. "Instead, we persuade the prospect to sit down with us for an interview."

"If the husband and wife are together, so much the better. We prefer to have a general talk with them before we even try to sell. During the interview, we usually obtain their name and address, number in the family, occupation of the members, and where they are employed. All this information gives us a solid background to use for future suggestions."

"Of course, building confidence in ourselves and our product is gradually brought into the interview. For instance, when the prospect tells us his address, we ask whether he is acquainted with certain people living

nearby, people who are using our type of unit.

"If he knows them, we show him our user list so that he can see their names and the dates when the units were purchased."

"It is quite likely that some of the executives and fellow employees of the firm for which the prospect works will be old customers of ours. We show their names to the prospect."

"This is all done in a general manner. We don't say, 'This neighbor of yours thinks we have a mighty fine refrigerator. Better let us send one out to you today.' We work up to the point where the customer asks to buy. Once he has decided that we have what he wants, we can begin to show floor units and quote prices."

HAVE COMPLETE DATA

"Sometimes a preliminary interview may take an hour or more, but it is time well spent. If the prospect leaves without making a purchase, we have complete data to enter on our prospect files which our salesmen can use in making follow-up calls."

The Morrison user list, made up of the names and dates of purchase of all sales made by the company, is sub-divided into geographical sections of the city for quick reference.

Every salesman carries with him a copy of the list whenever he goes out selling.

Another way in which the Morrison company builds confidence is by continuous newspaper advertising. Mr. Morrison, one of the largest users of newspaper space in the city, contends that constant advertising builds prestige and attracts prospects by impressing the company's name into people's minds long before they contemplate purchasing an appliance.

Free Oiling By Uniformed Salesmen Sells 48 Washers In Month

KANSAS CITY, Kan.—Attired in special company coats and caps and using as their entree the offer of free electric washer oilings, eight salesmen for Elder & Carey Electric Co. here sold 48 new washers during March, reports W. D. Elder, a partner with Thomas Carey in the firm.

The caps, of white duck with navy blue lettering, were purchased; white duck coats, with blue trim and company name across the back at shoulder height, were rented from a linen supply firm. The company pays for the laundering of these top coats, when they need it. Thus there is no added expense to the salesman in the promotion.

SELDOM TURNED DOWN

Under the direction of a crew manager, the eight salesmen, assigned to definite restricted territory, take their oil can, screw-driver, and pliers, offering to give any woman's washing machine a free oiling. Very seldom are they turned down, in homes where a power washer is maintained.

While they oil, they can check for needed repair parts, take notes on the model used, and note other appliances of a major nature in use or not yet purchased. Leaving, they leave literature for whatever washer models they think this family might be prospects for. There are no strings to the oil job, however; and no pressure is applied to move out a satisfactorily late model.

"Two things were accomplished in this month's business, besides the fact of hitting the ball on 48 sales," Mr. Elder pointed out. "Seventy-five per cent of these sales were to absolutely new accounts. This means a chance to build up these new customers into users of all our appliances and services."

"The second result about which we feel mighty good is that distribution of machines sold was as follows:

\$74.50 model was purchased by 30% of customers.

\$84.50 model was purchased by 15% of customers.

\$109.50 model was purchased by 55% of customers.

'HOT' ON TOP VALUE

"In addition to doubling our usual March volume," this dealer said, "we 'got hot' on our top value. All users of the aluminum-tub machine are going to have plenty of talking to do to their friends and neighbors. Women who buy extra-good merchandise talk it up. They get more, our salesmen get more, and the ledger sheets record a bigger dollars and cents increase."

Men wearing this trim uniform enjoy doing the grease job. They look professional, and feel the same way. The partners are continuing the plan indefinitely, and may use it on other appliances as the season advances. The investment is minor, Mr. Elder says, in comparison to the dividend it pays.

Dept. Store Pays Staff For Prospect Names

ST. LOUIS—In a special one-week drive to obtain electric refrigerator prospect-names, Stix, Baer & Fuller department store here offered its employees five cents each for names and addresses of icebox users living in homes or flats, plus extra awards of \$15, \$10, and \$5 to the three employees turning in the most names in the store-wide contest.

Employees participating in the contest, which ran from April 11 to 18, were instructed by the department store to turn in names of families living in homes or flats (not apartments) who use ice. Private families only, not business houses, were acceptable.

Lists on which names and addresses were to be recorded were obtainable from department heads or section manager, in the case of non-selling employees, and were to be returned to these officials at the close.

Both name and address were required, a mistake as to either invalidating that name as far as the bonus awards were concerned. Telephone numbers were to be included, wherever possible. Payment of bonuses and special awards was to be made as soon after the contest as names and addresses could be verified.

Essay Contest Gets Crowd To Trenton Show

TRENTON, N. J.—More than 15,000 persons attended the sixth annual Electric Refrigeration Show which closed a four-day run April 29 in the War Memorial building here, reports James R. Dunphy, chairman of the show committee of Central Jersey Electrical League, sponsor of the event.

Features of the exposition were limerick and essay contests, each with \$100 in prizes, and the awarding of \$100 in nightly door prizes. All awards were in the form of merchandise certificates, redeemable at participating dealers' showrooms; entry in the essay contest was restricted to those buying refrigerators during the show.

Exhibitors included Tab Electric Co., Sears, Roebuck & Co., Morse, Fineburg's, Brocks, Inc., Stern Appliance Co., Burns Appliance Co., Swern & Co., Trenton Lighting Studios, Home Furniture Co., Public Service Corp., Dunphy's, Hurley-Tobin Co., and Binder's.

Officers of Central Jersey Electrical League are: Joseph L. Quinty, president; Harley E. Gaskill, vice president; Henry Siegrist, treasurer; and Ronald T. King, secretary.

Bonus Plan Feature Of 5-Month Range Drive In St. Louis Area

ST. LOUIS—A comprehensive five months' campaign on electric ranges, featuring free installation and special bonuses for salesmen, has been inaugurated by the Electric Cookery Council of St. Louis, in cooperation with Union Electric Co., public utility. More than 300 dealers are tying-in with the drive, which was started with the "spring showing" of new range models.

An extensive direct-mail campaign will be an integral part of the drive, with the utility company sending literature to prospects over their dealer's name, and paying all postage and other expenses.

Following scale of bonuses has been set for salesmen during April and May: one range, no bonus; two ranges, \$2 per unit; three, \$3 per unit; four, \$4 per unit; and five and over, \$5 per unit. Bonus payments will be made to salesmen at the end of the two months, and will be paid by the utility through individual dealers.

Manufacturers and distributors of the following makes of electric ranges are cooperating with the utility in the drive:

Crawford, Estate, Frigidaire, General Electric, Hotpoint, Kelvinator, Prosperity, L & H, Marion, Monarch, Norge, Standard, Universal, and Westinghouse.

TEMPRITE
INSTANTANEOUS
BEER and WATER COOLERS
Detroit Michigan

MASTERCRAFT
ADJUSTABLE PAD AND CARRYING HARNESS
The most efficient and economical equipment made for handling refrigerators safely and without scratching or marring. Pad is separate from harness and both adjustable to all styles and sizes of cabinets.

Efficient, sturdy, easily and quickly applied. Name of refrigerator actually lettered on pad without charge. Adjustable Pad \$9.50 each. Adjustable Harness \$6.00 each. f.o.b. Chicago. Write for 1938 folder and prices on pad for refrigerators, washers, ice-cubes, ranges, radios, etc. Pat. Appl'd for.

BEARSE MANUFACTURING CO.
3815-3825 Cortland Street, Chicago, Illinois

EVERY REQUIREMENT

now fulfilled by

ONE INSULATION!

- | | |
|---|---|
| 1. Light Weight (from 1 1/4 lb. per cu. ft. up) | 9. Sulphur-Free and Non-Corrosive |
| 2. Non-Inflammability | 10. Resistance to Acids |
| 3. Extremely Low Moisture Absorption | 11. Resiliency and Flexibility (Non-Settling) |
| 4. High Insulating Value | 12. Sound Absorption |
| 5. Freedom from Rotting | 13. Freedom from Odors |
| 6. Rodent-, Vermin- and Termite-Proof | 14. Non-Absorption of Odors |
| 7. Fungus- and Bacteria-Proof | 15. Ease and Economy of Installation |
| 8. Permanence | |

Everything that you expect of an insulation—every quality or requirement—is obtained with Fiberglas Insulating Wool. Fiberglas is chemically stable. It is a test-tube product of the vast research and experimental facilities of the Owens-Illinois Glass Company. Because of matchless manufacturing facilities, Fiberglas is uniform—dependable... For complete and detailed information on the use of Fiberglas insulation in refrigerators and coolers, write the Industrial and Structural Products Division... Owens-Illinois Glass Company... 325 Madison Avenue... Toledo, Ohio.

FIBERGLAS Insulating Wool is manufactured by the OWENS-ILLINOIS GLASS COMPANY... world's largest manufacturers of GLASS CONTAINERS, and producers of FIBERGLAS Insulating Blankets and Filter Cloth, DUST-STOP Replacement-Type Air Filters and INSULUX Glass Block.

OWENS-ILLINOIS

Fiberglas

THE MODERN INSULATION

AMERICA'S KITCHENS



ARE GOING G-E!

NEW

Triple-Thrift

REFRIGERATOR

Thrifty in PRICE! Thrifty in CURRENT! Thrifty in UPKEEP!

ANOTHER THOUSAND NEW OWNERS SINCE YESTERDAY

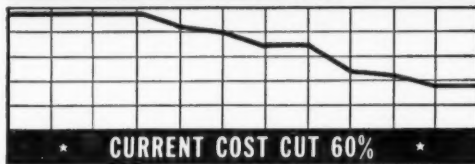
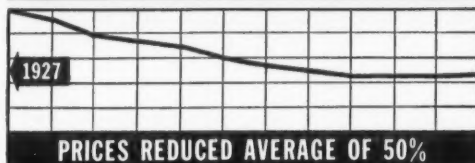
"Thrift-wise" buyers are choosing General Electric Triple-Thrift Refrigerators... over a thousand a day! "Sales-wise" dealers are featuring the G-E exclusively.

The General Electric Triple-Thrift Refrigerator started a new "Save Wave" in America. Last year more General Electric Refrigerators were bought than ever before and today's G-E is even a better buy.

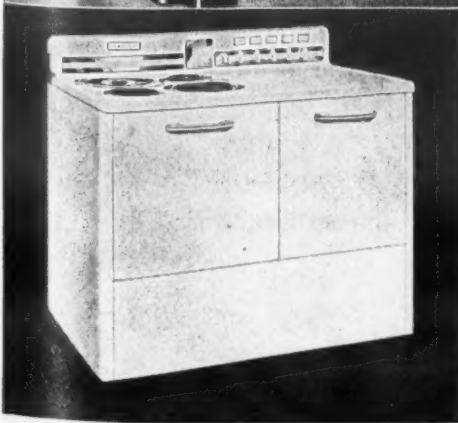
General Electric originated the *sealed* cold-making mechanism and 5 years performance protection plan. The simple, silent sealed-in-steel G-E Thrift Unit with OIL COOLING assures quieter operation, less current cost and *enduring* economy. It is *years ahead* for no other refrigerator manufacturer has had 12 years experience in *building and constantly improving a sealed mechanism*.

General Electric Company, Specialty Appliance Division, Nela Park, Cleveland, Ohio.

New 1938 G-E Models Climax a Smashing 12-Year Record of Ever Increasing Values!



The G-E Thrift Unit revolutionized refrigeration costs and is the only sealed cold-making mechanism that has been constantly improved for 12 years. It MUST BE GOOD for it is now widely imitated.



GENERAL ELECTRIC RANGE with Tel-a-Cook Lights, Select-a-Speed Calrod Cooking Unit, Tripl-Oven and other advanced features. 15 models at popular prices.

★

GENERAL ELECTRIC SINK with Dishwasher and Disposall. Washes the dishes, disposes of food wastes—electrically. It's your next big sales opportunity!



The COMPLETE line of electrical home appliances—every one proved by performance, tested by time!

"GO TO TOWN" on the MAINLINE

• General Electric Refrigerators, Ranges, Electric Sink with Dishwasher and Disposall, Water Heaters, Washers, Ironers, "Packaged" Commercial Refrigeration Products.



GENERAL ELECTRIC

Distributor-Dealer Doings

Wheeling Kitchen Named Hotpoint Distributor

WHEELING, W. Va.—Wheeling Kitchen Equipment Co. has been appointed distributor for the complete line of Hotpoint electrical appliances in the northern section of the state. W. H. Bondurant, district sales manager of Edison General Electric Appliance Co., Inc., has announced.

C. J. Gerker is president of the Wheeling company. L. A. Middleton, general manager, will handle utility accounts with Mr. Gerker. A. W. Pryor will handle dealer business.

Ex-Army Official Opens Monroe, La. Store

MONROE, La.—A. J. Sichtermann, former Army official, has opened a new electrical appliance retail store here under the name of Modern Appliance Co., handling G-E lines.

Rustin's Furniture Adds Kelvinator Lines

COLUMBIA, S. C.—Rustin's Furniture Store, 1715-17 Main St., has been named dealer for Kelvinator household and commercial equipment. Wallace Rustin is manager.

Oakland Appliance Has A New Location

OAKLAND, Calif.—Oakland Appliance Co., which for 15 years has been known as Maytag Oakland Shop, has opened at a new location on the corner of 20th and Telegraph here. The firm handles a complete line of General Electric household appliances, Maytag washers and ironers, and Sparks gas ranges. Members of the firm are Felix Bersano, general store manager; Edward O'Brien, service and parts manager; and Fred Maggiora, office manager.

Hennepin Takes On Crosley Units, Marion Ranges

MINNEAPOLIS—Hennepin Hardware Co. has added Crosley refrigerators and Marion electric ranges to its line of household appliances. George S. Wheaton is president of the firm, which has a store at 909 Hennepin Ave.

Knudson Bros.' New Store To Handle Zenith

MINOT, N. D.—Milo and Nels Knudson have formed Knudson Hardware Store at 21 Main St. here, handling Zenith refrigerators.

Morson, Lane To Manage Dayton, Ohio Branch

DAYTON, Ohio—Lee Morson of the Cincinnati staff of Harten & Knodel Distributing Co., distributor of Norge refrigerators and other Norge products, has been transferred here to assume charge of refrigerator sales. Richard Lane has been placed in charge of Philco radio sales.

These two men will assume the duties of George Schumacher, Dayton branch manager, who resigned, effective April 15. He had been manager of the Dayton branch since shortly after its opening here two years ago.

Modern Appliance Opens Tulsa Crosley Outlet

TULSA, Okla.—Modern Appliance Co. has opened as a Crosley refrigerator and appliance dealer at Sixth & Main Sts. here. C. W. Wheatley is sales manager, and is assisted in operation of the store by R. J. North. Spurrier's, Inc., is Crosley distributor in this territory, and M. L. Burgin is Tulsa manager.

South Bend Dept. Store Moves Appliance Dept.

SOUTH BEND, Ind.—Wyman's department store has moved its home appliance department to new quarters at 219 N. Michigan St. here. General Electric appliances and the Bendix laundry equipment are handled by the department, which also has a model G-E kitchen.

29 Charleston Dealers, Distributors Launch Refrigerator Drive

CHARLESTON, W. Va.—Twenty-nine Charleston appliance distributors and dealers recently launched their spring selling drive for mechanical refrigerators through a 16-page special section in the Charleston Gazette. News articles and illustrations stressed benefits of mechanical refrigeration over other forms of food preservation.

Firms participating were: Appalachian Electric Power Co. (Westinghouse), Bilt-Rite Sweeper Co. (Universal), Cavender Furniture Co. (Norge), Charleston Electrical Supply Co. (Norge), Diamond Department Store (Frigidaire), Electric Home Appliance Co. (General Electric), Galperin's (Westinghouse), Globe Furniture Co. (Crosley), Haynes' Modern Appliances (Kelvinator), Home Furniture Co. (Leonard).

Ideal Furniture Co. (General Electric), Kanawha Furniture Co. (General Electric), Londeree, Inc. (Crosley, Electrolux), McClung & Morgan Stores Co. (General Electric, Norge, Electrolux), W. H. McClug Department Store (Kelvinator), McCoy & Gallaher (General Electric, Hotpoint), McKees, Inc. (Norge, Hotpoint), Montgomery Ward & Co.

O. J. Morrison Department Store (Universal), Parris Furniture Co. (Electrolux, Universal), Parris-Huffman Co. (Hotpoint), Sears, Roebuck & Co. (Coldspot), Sigmon Radio Supply (Copeland), South Charleston Radio Service (Kelvinator), John L. Thomas (General Electric), Walker Home Furnishers Co. (Norge), West Virginia Heating & Plumbing Co. (Electrolux), and Woodrums' (Frigidaire, General Electric).

Roycraft-Iowa Adds York, Gibson & Brunswick

DES MOINES, Iowa—The Roycraft-Iowa Co., 412 Ninth St., distributor for Philco radios and Bendix washers in 60 central Iowa counties, has taken on distribution of Gibson electric refrigerators, Brunswick commercial refrigeration, and York air conditioning. D. H. Lipsey is manager of the company.

New Dealer In Dayton

DAYTON, Ohio—Home Equipment Co. has been organized here as a Norge refrigerator dealer for Harten & Knodel Distributing Co., local Norge distributor. George Strassburg and R. A. Freedlander are in charge of the new dealership.

Home Electric Shop Opens

OMAHA, Neb.—The Home Electric Shop has been opened as Westinghouse appliance dealer at 1806 Farnam St. by Sidney B. Lifschultz and R. H. Rosenthal.

New Sales Manager



H. F. HEYMAN

Heyman Heads Sales For Greene as Mason Joins New Cincinnati Firm

TOLEDO—H. F. Heyman has been appointed sales manager of J. W. Greene Co., distributor of Westinghouse refrigerators, RCA radios, and Bendix home laundry equipment in northwestern Ohio with headquarters here, succeeding Tom Mason, who has resigned to become a member of the Kelley-Mason Co., new firm organized to take over Westinghouse distribution in the Cincinnati area.

Mr. Heyman had been with Greene for the past four years as wholesale salesman, each year of which he qualified for membership in the Westinghouse "Quota Busters" club.

Prior to joining the Greene organization, he was manager of retail sales for General Electric refrigerator distributors in Harrisburg, Pa., and Toledo. Before that, he spent 11 years as manager of the Thor Electric Shops in Toledo and Cleveland.

The Kelley-Mason Co., which Mr. Mason left the Greene organization to help organize, will take over the 18 counties in Ohio, Kentucky, and Indiana formerly served by Tafel Electric Co., Louisville, Ky., distributor of Westinghouse refrigerators and Maytag washers.

The new distributorship will occupy the same location at 1121 Race St. formerly occupied by Tafel Electric Co.'s Cincinnati branch. Although it relinquishes the Cincinnati territory to the new company, Tafel will remain as Westinghouse distributor in the Louisville, Ky., area.

Mr. Mason, for the past six years sales manager for J. W. Greene Co., Toledo, previously had been with Tafel in Louisville. John S. Kelley, the other partner in the new distributorship, had been vice president of Tafel for the past eight years. Prior to that time, he had been an automobile distributor.

For small users

HERE's the ideal cooler for small offices and factories where initial outlay is an important factor. No frills but a well made, dependable Cordley Cooler you can be proud to sell. And one that you can count on for trouble-free operation year after year—your profit won't be eaten up in service.



as well

Our Model T-4, especially designed for smaller installations, cools from 3 1/4 to 5 1/2 gallons per hour, with two quart storage reserve. Attractive finish of opalescent bronze. Requires a minimum of floor space—15 1/2" square.

as for large ones or those



Model T-12 is a larger capacity cooler from 12 to 15 gallons per hour, with 2 1/2 gallon storage reserve. Grained furniture finish. Floor space required: 21 1/2" wide, 16 1/2" deep. Cordley models of varying capacities are available for every drinking water requirement.

WHERE drinking water requirements are greater, employees more numerous, we recommend the installation of one or more of the Cordley Model T-12, as shown to the left. The handsome, well insulated cabinet plus the sturdy, dependable cooling mechanism makes this a cooler second to none.



Model BC-3, suitable for office and reception rooms, 2 to 3 gallons per hour capacity, one gallon cold water storage. Requires only 15 1/2" square floor space. May be equipped or not with built-in storage compartment of stainless steel, equipped with lock, at slight additional cost.

who need bottle

FOR pure bottled water service, or where city water supply is unavailable, the situation calls for a bottle type cooler. Bottle coolers, as you know, have the advantage of being easily moved and requiring no plumbing or installation expense. Cordley models are handsome, compact and sanitary... likewise built to Cordley quality standards. Whatever the requirements, there is a Cordley Cooler to suit.

CORDLEY & HAYES
157 Hudson Street, New York City

sell **CORDLEY** water coolers

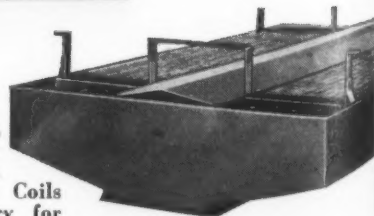
It's the REMPE AUTODRAFT UNIT COOLER

~ that correctly cools, circulates and humidifies the air in a walk-in cooler.

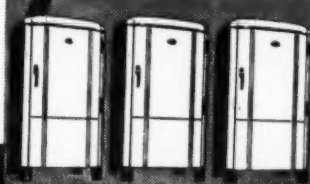
REMPE Autodraft cools scientifically, circulating the air at a correct rate of speed, circulating humidified air, overcoming condensation and drip. Coils are correctly spaced at the factory for highest efficiency. For interesting and completely descriptive folders—

write ~ **REMPE Company**
340 N. SACRAMENTO BLVD. • • • CHICAGO

Write for data, also on PIPE COILS, FIN COILS, PIPE BENDS, etc. You can RELY on REMPE PRODUCTS.



You'll sell more Copelands



Because they're built right—super-featured for quick sale, super-powered for performance. Because they're priced right—giving you the great advantage of low cost, low down payment, easier terms.

Write TODAY for facts
Copeland Refrigeration Corporation
Sidney, Ohio

ASK ABOUT COPELAND'S COMMERCIAL REFRIGERATION AND COPELAND WATER COOLERS

Commercial Refrigeration

New Orleans' Famed Old French Market Modernized With New Refrigerators

NEW ORLEANS—Complete transformation has been effected in the French Market here with the installation of 22 display cases operating on six 3-hp. units, five meat storage cases having a total of 20 separate sections, and a thorough architectural redesigning.

Refrigeration equipment was installed by Southern Refrigeration Sales, exclusive metropolitan dealer for General Electric Supply Corp. Originally built in 1799, the old

it was fun scrambling over the crawfish and slithering over the crushed vegetables and playing the crossword puzzle of driving a car into the neighborhood. As to the truck growers, the fishermen, and others, they had abundant grievances, but, happily, these oft were expressed in French or Italian.

"So the old market has been done over, thanks to the taxpayers and the corporation governing it. . . . The meat market has been refrig-

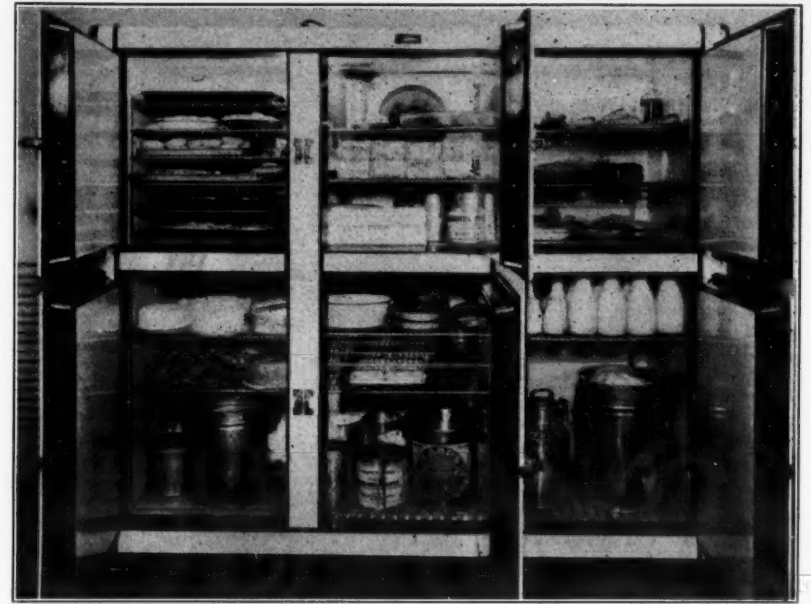
Panel Body Refrigerated For Ice Cream Co.

WHEELING, W. Va.—The Ziegenfelder Ice Cream Co. recently put in service a standard Reo 1½-ton panel body which had been converted into a refrigerated body by Bode-Finn, Inc., Cincinnati.

The panel body is equipped with 8 inches of Dry-Zero insulation in the roof, sides, and ends and with 6 inches of cork in the floor. A standard refrigerator door is built into the rear compartment, and one Kold-Hold unit is mounted in the ceiling. The body carries 160 gallons of ice cream on the floor, and has ample capacity for package goods and novelties above the cans.

The Kold-Hold unit is arranged for connection with a ¾-hp. Kelvinator compressor located in the company's garage.

How a Baker's Refrigerator Is Used



Shown here is a Seeger AC-64 cabinet adapted for use as a bakery refrigerator in the Thomsen Bakery, Chicago. The picture, besides showing that many things other than baked goods are stored in a bakery unit, gives a good idea of storage space requirements.

How a Food Market Built In 1799 Was Rejuvenated



Some of its picturesque qualities for sightseers were lost, but a great deal in attractiveness and sanitation was gained when merchants occupying New Orleans' historic French Market replaced the unsightly display tables at the left with modern electrically refrigerated display cases, as shown at the right. Included in the installation were 22 cases and coolers equipped with General Electric compressors.

French Market is a landmark of New Orleans, though it no longer is anything like its former self. About the only remaining original feature is its roof of heavy cypress beams secured with wooden pegs.

What used to be a dark, poorly lit market with open wooden tables, meat blocks, cracked floor littered with sawdust, and piled up heaps of boxes, sacks, and unassorted junk, is now one of the most modern meat, vegetable, and fruit markets in the country.

Display cases have replaced the unsanitary open counters, meat coolers have taken the place of old ice boxes, modern lighting has been installed, new walls, ceiling, and floor have been constructed, and a ventilating system has been arranged.

The French Market Corp. reports that the sanitation appeal of the new refrigerating equipment already has resulted in a great deal of increased business, and spoilage, discoloration, and sweating of meats have been eliminated.

Commenting on the importance of the remodeling of the market to New Orleans citizens and sightseers, the New Orleans Times-Picayune, said:

"Our ancient Place d'Armes may have been the heart of New Orleans, but the French Market, if we may phrase the idea inelegantly, was its stomach."

"To artists and sightseers, the market was an abiding delight, but ordinary residents of New Orleans and the adjoining parishes gradually became irked at its antiquity of method. The buildings were wondrously picturesque, and great bargains were to be had in them, and

erated mechanically; the fish market has been iced after the modern method; the several buildings have been screened; even the exposed fruits have been provided with various aids to sanitation. . . . The times have changed, and the great central food market of New Orleans has changed with them.

"In this process there has been some sacrifice of the picturesque, but large gain for public health, economy, and convenience."

Cold Storage Plant Adds Two Cooler Rooms

CLARKSDALE, Miss.—Two additional cooler rooms have just been completed which will double the capacity of the Coahoma cold storage plant here. During the plant's first year of operation, 277,000 lbs. of meat were handled, reports F. A. Grice, company manager.

Refrigeration & Sanitation Improved For Bakery By Adapting Seeger Cabinet

CHICAGO—Problems of both refrigeration and sanitation have been solved for Thomsen Bakery, 6708 Belmont Ave., by use of a Seeger AC-64 refrigerator adapted for service there, the owner of the bakery has reported to Manager Keely of Seeger Refrigerator Co.'s Chicago office.

CLEANING PROBLEM

The bakery had been using a refrigerator with a galvanized interior, fitted with racks on which the baker pans were to slide. However, the owner told Mr. Keely, the galvanized surface collected much of the dirt and grease that naturally accumulates in a large bakery where fast work is necessary, with the result that much cleaning and scouring had to be done to keep the interior clean.

Also, the owner complained, the

trays fitted into the racks so tightly that they tended to stick unless pulled out exactly straight, and because they filled the interior of the cabinet, circulation of air around the stored bakery goods was impeded.

ADDITIONAL SHELVING

Mr. Keely solved the problem to the baker's satisfaction by equipping an AC-64 all-porcelain Seeger model with additional shelving. Bakery trays were slid in on the shelves instead of on racks, allowing space on each side of the trays to provide for air circulation.

One of the baker's reasons for seeking a refrigerator that was easier to keep clean, he told Mr. Keely, was that it had been his experience that the unit was used as much for storing ingredients used in bakery work as for baked items themselves.

Copper Tubes, silver-soldered to copper tube sheets, insure permanent freedom from leaks and corrosion in Servel condensers.



LESS WATER... LESS ELECTRICITY!

The condenser which must finally dissipate the heat in the compressed refrigerant performs a vitally important step in the refrigeration cycle.

Because they have been developed by intensive engineering research and are carefully fabricated from the finest materials, Servel condensers are efficient and durable.

All heat-transfer areas are pure copper, and all water-carrying parts are copper or hot-dipped

galvanized iron. Forged fittings and silver-soldered joints insure permanent freedom from costly leaks.

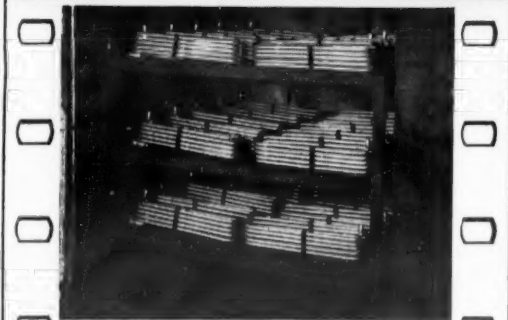
Servel refrigerating machines operate at low head pressures, affording reduced power and water consumption.

Servel engineers will gladly help you with your commercial refrigeration or air conditioning problems. Write today for complete, interesting information.

SERVEL, Inc.

ELECTRIC REFRIGERATION AND AIR CONDITIONING DIVISION
EVANSVILLE, INDIANA

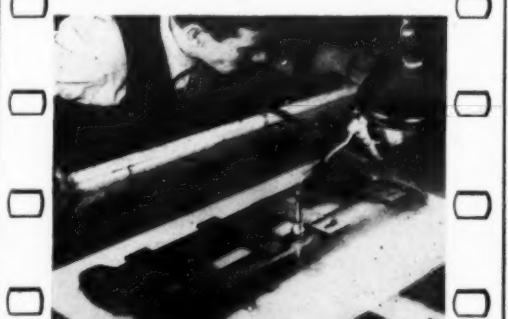
MATERIALS...MACHINES...MANPOWER



DRYING—All Servel condensers are dehydrated in special ovens to protect them against the hazards of moisture.



PROTECTION—Burnished tubing is dipped in lacquer to insure permanent brilliance and absence of discoloration.



INSPECTION—Submersion tests of completed assemblies at 300 lbs. per sq. in. guard against refrigerant leakage.

'Frisco Exposition Plans Frosted Foods Show

SAN FRANCISCO—Quick-freezing methods, a boon to western fruit and vegetable production, will be demonstrated in the Hall of Foods and Agriculture at the 1939 Golden Gate International Exposition.

Evidence of the growing interest in quick-freezing in this state, which ships approximately 150,000 carloads of fruit a year, was shown at a recent "frozen-pack" exhibit and technical conference luncheon here, sponsored by the Pacific States Cold Storage Warehousemen's Association and the California chapter of National Association of Practical Refrigerating Engineers.

The luncheon featured food items which were preserved by frozen storage, and the exhibit included displays of foodstuffs kept fresh through this method.

Week-Long A.S.R.E. June Convention Will Be Split Between Technical & Food Groups

(Concluded from Page 1, Column 2)
George B. Bright, Detroit; "The Ideal Refrigerant," by W. L. Knaus, General Electric Co., Ft. Wayne, Ind.; "International Efficiency," by Siegfried Rupprecht, New York City; and a showing of the film, "Cold Magic," prepared by York Ice Machinery Corp.

The A.S.R.E.-Penn State sponsored Foods Conference, of the "short course" type, is expected to attract men engaged in practical phases of refrigeration who wish to increase their knowledge of the field. Prof. F. C. Stewart of the Penn State mechanical engineering department is chairman of the program committee for the conference.

Tentative conference program for the afternoon of June 21 lists papers on "What Is the Food Industry?" by Dr. L. F. Burton; "Consumer Trends in Food," by a speaker to be announced; "The ABC of Food Bacteria and Enzymes," by Dr. M. Farrell; and "Vitamins in Food—Effect of Time and Temperature," by Dr. R. A. Dutcher.

Papers scheduled for presentation at June 22 sessions include "Basic Thermal Concepts and Their Application to Various Types of Refrigeration Systems," by Prof. Stewart; "Air Properties and How They Are Controlled," by F. Urban; "The Ice Cream Industry," by a representative of International Association of Ice Cream Manufacturers; "Milk Cooling Requirements and Equipment

on the Dairy Farm," by Prof. J. E. Nicholas.

Inspection of the milk cooler laboratory and a demonstration by Alco Valve Co. also are scheduled on the day's program.

On the June 23 program, papers to be presented include "Business Trends in Cold Storage," by George A. Horne; "Humidity as a Factor in Food Storage and Processing," by L. L. Lewis; "Refrigeration Functions in a Packing Plant," by Henry D. Tefft; "Slow and Quick Freezing of Commodities," by Dr. D. K. Tressler; "Precooling of Fruits and Vegetables," by D. F. Fisher; and "Precooling of Eggs on the Farm," by Prof. Nicholas.

Last day of the conference, June 24, will be taken up with papers on "Quick Freezing of Poultry," by Van R. Greene; and "Practice in the Poultry Industry," by Paul Mandeville.

Petition in Bankruptcy Filed By Larkin Corp.

ATLANTA—An involuntary petition in bankruptcy was filed May 2 against Larkin Refrigerating Corp., coil manufacturer, with Aluminum Co. of America, Detroit Lubricator Co., and Revere Copper & Brass, Inc. as the petitioning creditors. Claims of the petitioning creditors amounting to \$47,998.21 principal, plus interest, are said to have been admitted by the company.

Halifax Lawmakers Move To Protect Instalment Buyers

HALIFAX, N. S., Canada—A measure designed to protect instalment purchasers from high-pressure salesmanship has just been passed by Nova Scotia's legislature.

The law, which was drawn by Attorney General J. H. MacQuarrie, seeks to protect instalment buyers from repossession of purchased goods when unable to continue payments because of such misfortune as illness. It applies to purchases between \$25 and \$500, and provides that the courts decide on the merits of the case before goods are repossessed.

Return of purchased goods after at least a third of the purchase price is paid is also provided by the bill. In cases where the merchandise has been kept for a relatively long time, more than one-third would have to be paid before it could be returned.

The attorney general said the measure is not intended to interfere with purchasers using the instalment plan judiciously, but is designed merely to protect buyers against being over-sold.

Sylvester Resigns Post With Kelvinator

DETROIT—E. L. Sylvester has resigned his position as sales manager of residential air-conditioning and automatic heating equipment for Kelvinator division of Nash-Kelvinator Corp., effective May 1.

Builders Must Change Habits Before Home Conditioning Sales Can Rise, Architect Says

(Concluded from Page 1, Column 3)
tion under the present methods used in building.

"It is true that the house cannot be built on an assembly line, like the automobile, but it is possible that the several parts of a house can be built in this manner and assembled on the job," Mr. Cuthbert said.

To illustrate his point that changes in building methods are resisted by entrenched habits and short-sighted policies of certain suppliers, Mr. Cuthbert cited the fact that certain gas companies and manufacturers of gas ranges resisted the use of insulation in ovens, until the electric range came along and started to take the market. At the present time the policies of the gas companies have been reversed, and everything is being done to make the new units as economical and attractive as the competing electric stoves.

Mr. Cuthbert feels that the problem of the small house is similar. Using as an example a 6-room bungalow, he pointed out that the heat loss on this building was normally 62,000 B.t.u. hourly. By the addition of weatherstripping, insulation in attic, and storm windows, the heat loss was cut down to approximately 32,000 B.t.u. per hour.

"At the present time no manufacturer of coal burning heating systems manufactures a unit designed to carry a heat load as small as this," Mr. Cuthbert said. "The smallest winter air-conditioning units on the market have an 18-in. firepot, and a B.t.u. output of about 75,000 hourly. As a matter of fact, the coal industry does not have anything to offer in the small residence field at the present time.

"Under the present methods, the poor man gets a furnace of low efficiency, while the well-to-do individual has the benefit of splendid engineering in the air-conditioning field.

"What is needed most is for some of the old-line companies to change their thinking, even though they have a large investment in patterns and parts. Personally, I welcome the advent of 'big names' in the heating field. Concerns like Chrysler, General Motors, General Electric, and Westinghouse may eventually find the solution of heating the small residence.

"Installation costs are inordinately high on winter air conditioning. Sheet metal is figured at from \$14 to \$16 per register. Obviously there are just as many registers in a small six-room house as there are in a large six-room house. The owner of the small house pays more than his proportionate share for metal work.

"There is no reason why air ducts in the small residence must be made out of metal. Temperatures are never high, and modern systems are equipped with safety controls. Why not make these ducts out of foil-backed corrugated paper, or some other cheap substance. Return air ducts are much more satisfactory made out of building board, as it is comparatively sound proof.

"If the coal industry is to keep up in the automatic heating and winter air-conditioning field, equipment must be made more automatic.

"Coal dealers will have to give more service to compete in the heating market. Why not line coal bins with some kind of heavy paper, before putting in coal. The expense would be small and this precaution would keep dirt out of the house.

"If solid fuels are to be used in the winter air conditioning of small residences, the coal interests must produce smaller, more compact heating plants, must promote insulation and good building construction, develop stokers that need less attention, and give more service to the public."

Minn. Trade Practices Act Held Illegal

(Concluded from Page 1, Column 2)
Tea Co. for an order to prohibit enforcement of the act by state or county officials. Circuit Judge John B. Sanborn and District Judges Gunnar H. Nordbye and M. M. Joyce frowned upon the provision of the law which set up the 10% margin, sales below which would be considered conducted at a loss.

"The object sought to be accomplished by the legislature is the prevention of the sale of goods, wares, and merchandise in Minnesota at prices less than cost, with the intent and purpose of injuring competitors and destroying or lessening competition," said the court.

"If all profitless sales were always or even usually made by merchants for the purpose of injuring competitors, we would not hesitate to say that the legislature was within its rights in creating a presumption of sale below cost with wrongful intent.

"So far as we are aware, however, such sales (below cost) have not been regarded as indicating intent to do evil. There are many reasons aside from a desire to injure competitors which might induce a merchant to make profitless sales of goods. The statute itself recognizes the right to meet competition."

FOR AIR CONDITIONING AND REFRIGERATION SERVICE!

Known throughout the refrigeration world for their long service and dependability, Kerotest Diaphragm Packless Valves have the unique distinction of being the only refrigeration valves in which the diaphragms may be replaced (when necessary) without interrupting the flow of refrigerants through the service line. The patented backseating design makes this

possible and assures a control installation that is really PERMANENT—truly the valves of eternal youth.

No other refrigeration or air conditioning valve has this exclusive Kerotest feature—no other manufacturer can offer the advantages of Kerotest Diaphragm Packless design. Specify Kerotest and solve your valve problems.

KEROTEST MANUFACTURING COMPANY
PITTSBURGH, PA.

Air Conditioning

11 Systems Sold In Detroit During March

DETROIT—Eleven air-conditioning systems were sold by Detroit firms during March, totaling 245 connected horsepower, according to reports made to the Detroit Edison Co. and the Air Conditioning Association of Michigan. All but one of the installations were made by member firms in the association.

Largest number of installations made by one concern was four, made by Mechanical Heat & Cold, Inc., representing Westinghouse. Airtemp Construction Corp. sold the greatest amount of tonnage, installing 75-hp. systems in two theaters.

Complete sales records for the month are given in the table below, which shows the name of owner, equipment used, and amount of connected horsepower.

Panama City Building To Be Conditioned

PANAMA CITY, Panama—First major installation of air-conditioning equipment in this country is to be made in a new office building being constructed here for a local merchant. Apparatus will be American-made and is said to have cost about \$8,000.

Conditioner Group In Dakota Association

MINOT, N. D.—Air conditioning contractors are represented in the newly organized North Dakota Association of Electrical Contractors, established recently at a meeting of 10 representatives of key cities here.

Officers named are Frank Buzzel, Jamestown, president; Mert Whalen, Minot, vice president; and R. L. Melville, Bismarck, secretary and treasurer. Directors are Sophus Henriksen, Minot; B. K. Skeels, Bismarck; and V. V. Dickinson, Devils Lake.

Charles Kopald, Minot, and Mr. Skeels were named by president Buzzel to draw up a constitution and by-laws for the association, to be placed before members at a meeting to be held in Jamestown in June.

Carle-Boehling To Equip Richmond, Va. Hotel

RICHMOND, Va.—Carle-Boehling Co., Inc., has been awarded the \$36,170 air-conditioning contract for the John Marshall hotel here. The installation will serve the coffee shop, the main auditorium ballroom, and the private dining rooms.

Table Of 11 Air-Conditioning Installations Sold By Detroit Firms In March

Owner	Equipment	Hp.
Marine Hospital	Westinghouse	25
Circle Theater	Airtemp	75
Detroit Film Laboratories	Kelvinator	15
Mayfair Theater	Airtemp	75
Hackett Funeral Home	Westinghouse	2 1/2
Champion Spark Plug Co.	Westinghouse	20
Sanders Confectioners (Belle Isle)	Carrier	15
Real Steak Hamburger	Lipman	10
Dearborn Gauge Co.	Frigidaire	2
State Coffee Shop (self-contained unit)	York	5
Dr. F. A. Koski, Dentist (room cooler)	Westinghouse	1 1/2

Only the better air conditioning systems can furnish



A GENTLY MOVING VOLUME OF SLIGHTLY COOLED AIR

This is the condition that increases the delightful feeling of comfort that distinguishes a good system from a faulty system.

A faulty system, wherein quantities of air inadequate for ventilation, but sufficient for cooling, are cooled to a very low temperature and supplied to rooms where people congregate, can result only in producing cold drafts and shock. Unfortunately, competition has forced engineers to design such systems.

Auditorium Systems are not designed to meet this competition. For nearly a decade they have adhered to the principle of discharging adequate quantities of air at a sufficiently low temperature to absorb the human and mechanical load, but still high enough to avert cold drafts and shock. "A gently moving volume of slightly cooled air."

Auditorium Air Conditioning Systems are efficient and their cost is reasonable. Their wide acceptance by leading engineers proves this. Isn't this sufficient reason why you should investigate their superior features before you decide on any system for air conditioning?

Any of the Licensees listed will gladly explain how you can secure permission to install a Licensed Auditorium System.

AUDITORIUM LICENSEES

American Blower Corporation
Detroit, Michigan
Buffalo Forge Company
Buffalo, New York
Carrier Corporation
Syracuse, N. Y.
Garage Fan Company
Kalamazoo, Michigan
Frick Company
Waynesboro, Pa.
General Electric Co.
Schenectady, N. Y.
J. O. Ross Engineering Corporation
New York, N. Y.
B. F. Shurtzoff Co.
Hyde Park, Boston, Mass.
Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.
York Ice Machinery Corp.
York, Pa.

AUDITORIUM CONDITIONING CORPORATION

New York Office . . . 17 EAST 42nd STREET
In Canada—AUDITORIUM AIR CONDITIONING, LTD., Dominion Sq. Bldg., Montreal

Survey Shows Reactions Of Business Men Who Bought Air Cooling

NEW YORK CITY—How air conditioning has increased business for merchants and professional men in the Detroit area was told by A. D. McLay of Detroit Edison Co. in reporting a survey made by the company to the Sales Conference of Edison Electric Institute.

Letters enclosing a questionnaire card were sent to air-conditioning users in Detroit Edison territory. The replies show the great popular approval that owners of equipment are giving to air conditioning.

In answer to the direct question, "Are you pleased with your air conditioning?", the replies were 100% favorable, with 98% giving unqualified endorsement.

Of the reports received, 55% stated that air-conditioning equipment had increased their summer business 25% or more, with 4% of that group indicating a 100% increase in business. The other 45% stated that increases in business had run from 10 to 20% in all instances.

Discussing the advantages that air conditioning had brought them, 97% of these business concerns said that customers had mentioned relief from the heat of the street; 49% considered the elimination of dust and dirt as the chief asset; decreased spoilage and fewer "rejects" were important gains cited by 12% of the concerns; and 38% mentioned the elimination of noise.

Mr. McLay pointed out that the latter advantage, the elimination of noise, dust, and dirt of the street, was among the chief benefits of the air-conditioning industry to business.

5 New Distributors Named By Airtemp

DAYTON, Ohio—Appointment of five new distributors for its air-conditioning equipment has been announced by Airtemp, Inc., subsidiary of Chrysler Corp. They are: Utah Builders Supply Co., Salt Lake City, Utah; H. P. Anderson, president; E. O. Anderson, vice president; and L. E. Harrington, secretary-treasurer.

Berkshire Sheet Metal Works, Inc., 65-83 McKay St., Pittsfield, Mass.; W. F. Goodell, president; L. E. Shaw, secretary; and D. L. Hood, treasurer.

H. E. Crook, Inc., 28 Light St., Baltimore, Md.; H. E. Crook, president; C. H. Crook, vice president; and W. L. Handy, secretary-treasurer.

Valley Electric Co., 320 W. Washington St., Phoenix, Ariz.; R. H. Wallace, president; M. E. Whitener, vice president; and M. M. Sharp, secretary-treasurer.

Airtrol Corp., 20 Central Ave., East Orange, N. J.; W. B. Ferguson, president; J. B. Berg, treasurer; and E. R. Dexter, secretary.

Dave Kaufmann's Will Sell Johnson Cooler

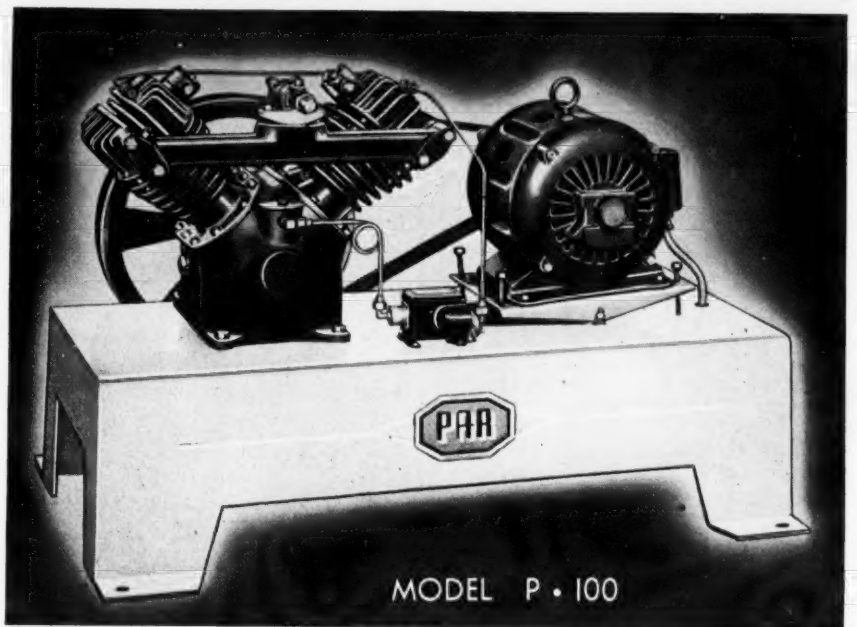
BALTIMORE—Dave Kaufmann's Sons, Charles and Lombard Sts., house furnishings, appliance, and radio distributor, has been named distributor in this territory for the Johnson "space cooler" unit manufactured by the refrigeration division of Johnson Motors, Galesburg, Ill.

Martinelli Sets Up as Manufacturers' Agent

SPRINGFIELD, Mass.—A. C. Martinelli Co. has been established here as a manufacturers' agency handling heating, ventilating, and air-conditioning equipment in New England and New York state.

A. C. Martinelli, former general sales manager for Hexcel Radiator Co., Racine, Wis., is founder and general manager of the new firm, which also has offices in New York City and Boston.

Manufacturers represented are: American Furnace Co., St. Louis; Bluffton Mfg. Co., Findlay, Ohio; Eastern Foundry Co., Boyertown, Pa.; King Ventilating Co., Owatonna, Minn.; Uniflow Mfg. Co., Erie, Pa.; and Whiting Corp., Harvey, Ill.



PAR POWER PLANT CONDENSING UNITS

—are designed for use with evaporative condensers. There are six popular sizes, from 1-1/2 to 10 horsepower. They can be installed in any multiple combination that will take care of almost all air conditioning applications.

OUTSTANDING FEATURES

- Large capacity, slow speed compressors
- All compressors V-type, four cylinder
- Crankshaft driven compressors
- Three-ring pistons—2 compression, 1 oil ring
- Compressor valve in removable valve plate
- Bulls-eye sight oil gauge in crankcase
- Pressed steel bases
- Convenient rocker type motor adjustment

There are six compressor bodies and twenty-eight complete high-sides in the Par line, in a range of sizes from 1/4 to 20 horsepower.



Write TODAY FOR THIS FREE CATALOG! MODERN EQUIPMENT CORP., DEFIANCE, OHIO

SEE THE PAR UNITS NOW ON DISPLAY AT YOUR NEAREST JOBBER

Atlanta, Georgia: Bowen Refrigeration Supplies, Inc.
Baltimore, Maryland: Melchior, Armstrong, Dessau Co.
Birmingham, Alabama: Refrigeration Supplies Distributor
Boston, Massachusetts: Melchior, Armstrong, Dessau Co.
Brooklyn, New York: Melchior, Armstrong, Dessau Co.
Buffalo, New York: Root, Neal & Co.
Charleston, W. Virginia: Air Conditioning & Refrigeration Sup., Inc.
Chicago, Illinois: H. W. Blythe Co.
Cincinnati, Ohio: Merkel Brothers
Cleveland, Ohio: Debes & Co.
Columbus, Ohio: Hughes-Peters Co.
Dallas, Texas: The Electromotive Corp.
Dayton, Ohio: Allied Refrigeration Parts Co.
Denver, Colorado: Refrigeration Service Co.
Detroit, Michigan: W. C. DuComb Co., Inc.
Des Moines, Iowa: Dennis Refrigeration Supply Co.
Flint, Michigan: Shand Radio Specialties
Ft. Worth, Texas: McKimley Refrigeration Supply
Greensboro, N. Carolina: Home Appliance Serv. Co.
Harrisburg, Pennsylvania: Melchior, Armstrong, Dessau Co.
Hartford, Connecticut: Melchior, Armstrong, Dessau Co.
Houston, Texas: D. C. Lingo Co.
Indianapolis, Indiana: F. H. Langsenkamp, Inc.
Jacksonville, Florida: The Jamita Co.
Kansas City, Missouri: Forslund Pump & Machinery Co.
Long Beach, California: Refrigeration Supply Distributors
Los Angeles, California: Refrigeration Parts Exch.
Louisville, Kentucky: S. W. H. Supply Co.
Madison, Wisconsin: Gustave A. Larson Co.
Memphis, Tennessee: United Refrigeration Supply Co.
Miami, Florida: Berner-Pease, Inc.
Milwaukee, Wisconsin: Refrigeration Specialty Co.
Minneapolis, Minnesota: Refrigeration & Industrial Supply Co.
Montgomery, Alabama: Teague Hardware Co.
Newark, New Jersey: Melchior, Armstrong, Dessau Co.
New Haven, Connecticut: Resco, Inc.
New Orleans, Louisiana: The Spangler Co.
Newport News, Virginia: Noland Company
New York City, N. Y.: Melchior, Armstrong, Dessau Co.
Oklahoma City, Oklahoma: Mike Supply Co.
Omaha, Nebraska: Interstate Machinery & Supply Co.
Oshkosh, Wisconsin: Gustave A. Larson Co.
Peoria, Illinois: R. E. Thompson Co.
Philadelphia, Pa.: Melchior, Armstrong, Dessau Co.
Pittsburgh, Pa.: William Orr Company
Phoenix, Arizona: Refrigeration Supply Dis.
Portland, Oregon: Refrigerative Supply Co.
Richmond, Virginia: A. R. Tiller, Inc.
Rochester, New York: Melchior, Armstrong, Dessau Co.
Rockford, Illinois: Gustave A. Larson Co.
Sacramento, California: Hinshaw Supply Co.
San Francisco, California: California Refrigerator Co.
Seattle, Washington: Refrigerative Supply Co.
Shreveport, Louisiana: Interstate Electric Co.
Sioux City, Iowa: Refrigeration Supply Co.
South Bend, Indiana: F. H. Langsenkamp, Inc.
Spokane, Washington: Ditlevson & Evans
Springfield, Illinois: Springfield Refrigeration Supply Co.
Springfield, Mass.: C. P. Payson Company
St. Louis, Missouri: The Spangler Co.
Tampa, Florida: Bowen Refrigeration Supplies Co.
Toledo, Ohio: Baumgardner Distributing Co.
Tulsa, Oklahoma: Machine Tool & Supply Co.
Washington, D. C.: Melchior, Armstrong, Dessau Co.
Waterloo, Iowa: Winterbottom Supply Co.
Wichita Falls, Texas: United Electric Serv. Co.
Toronto, Canada (Ont.): Railway & Engineering Specialties, Ltd.
Montreal, Quebec, Canada: Railway & Engineering Specialties, Ltd.
Winnipeg, Man., Canada: Railway & Engineering Specialties, Ltd.

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DEFIANCE • OHIO • U. S. A.

AIR CONDITIONING & REFRIGERATION NEWS

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Beat Them To the Punch

GOING the rounds of the nation's picture houses just now is a homey sort of picture titled "Judge Hardy's Children." In this picture Lewis Stone has apparently been trapped by some sharpers down at Washington into making a judicial decision which he knows will eventually retire him from public life in disgrace.

But his small son, Mickey Rooney, comes to bat at the end of the picture with a slogan, "I always beat 'em to the punch," which saves the hide of "Judge Hardy." Instead of taking it lying down, the old judge attacks first, and with the same weapons.

Private Enterprise Is Under Fire

That same slogan might well be employed by industry today. Private enterprise, industry, is under sharp attack today. The weapons being used by the opposition are the weapons of publicity. So effectively have they been wielded that the Roosevelt-Farley political machine has had things its own way for the last six years, and may continue to keep America "in the bag" for the next 60 years if private enterprise doesn't turn the tide in the other direction.

Fire must be fought with fire; publicity must be counter-attacked with publicity. Otherwise "the American way" will be gone with the wind, and we'll all be goose-stepping toward the next war.

Paul W. Garrett, director of public relations for General Motors Corp., told the American Association of Advertising Agencies a fortnight ago that industry had only itself to blame for becoming frightened at the "smear technique of the opposition."

He also struck hard at the tendency of industry to move with subterfuge, in secrecy. Industry has been prone to work on the theory that "what the people don't know won't hurt them." On the

contrary, what the people don't know hurts industry.

"Coincident with a decline in the spirit of free governments of the world, and as a direct outgrowth of it," said Mr. Garrett, "has come a challenge to that institution so firmly imbedded in American tradition known as private enterprise. Call it the system of individual initiative, or the capitalistic order, or the American way of work and life—call it what you will, the facts are that our whole economic and industrial structure has been thrown into confusion.

Industry Has Failed To Be Articulate

"It has been thrown into confusion not because of any inherent or irremediable weakness within itself, but because it has failed to make clear to people the philosophy and principles of its own existence. If the American business system is to preserve the right to continue its contributions to the general welfare, it must learn to interpret itself in deeds and in words that have meaning to others than itself.

"For it is not what industry can do for itself that matters. Industry's destiny rests and must necessarily rest not on the system's benefits to capital, not on its benefits to labor, but in the final analysis on its benefits to that most important group that is the common denominator of all—the consumer, the group that outnumbers and includes all others.

Consumer Doesn't Recognize His Real Benefactors

"We have been generally alert in building a profit motive system that has brought to the American consumer the highest standard of living in the history of mankind. We have been unbelievably stupid in our failure to give him an understanding of how it is that consumer dreams and desires become realities under our system of large scale enterprise.

"We have made no appreciable effort even to explain the A B C's—the simple premises and processes—of the American plan; to explain that the standard of living for all goes up, and can only be made to go up, as the true price of goods for all is brought down."

And until this elementary concept is got across, how can we expect people to understand that their advanced standard of living—far beyond anything else in the world—is inextricably linked to the characteristic American plan of mass production in industry by which managements are forever striving to drive costs lower and lower to make more and more goods for more and more people?

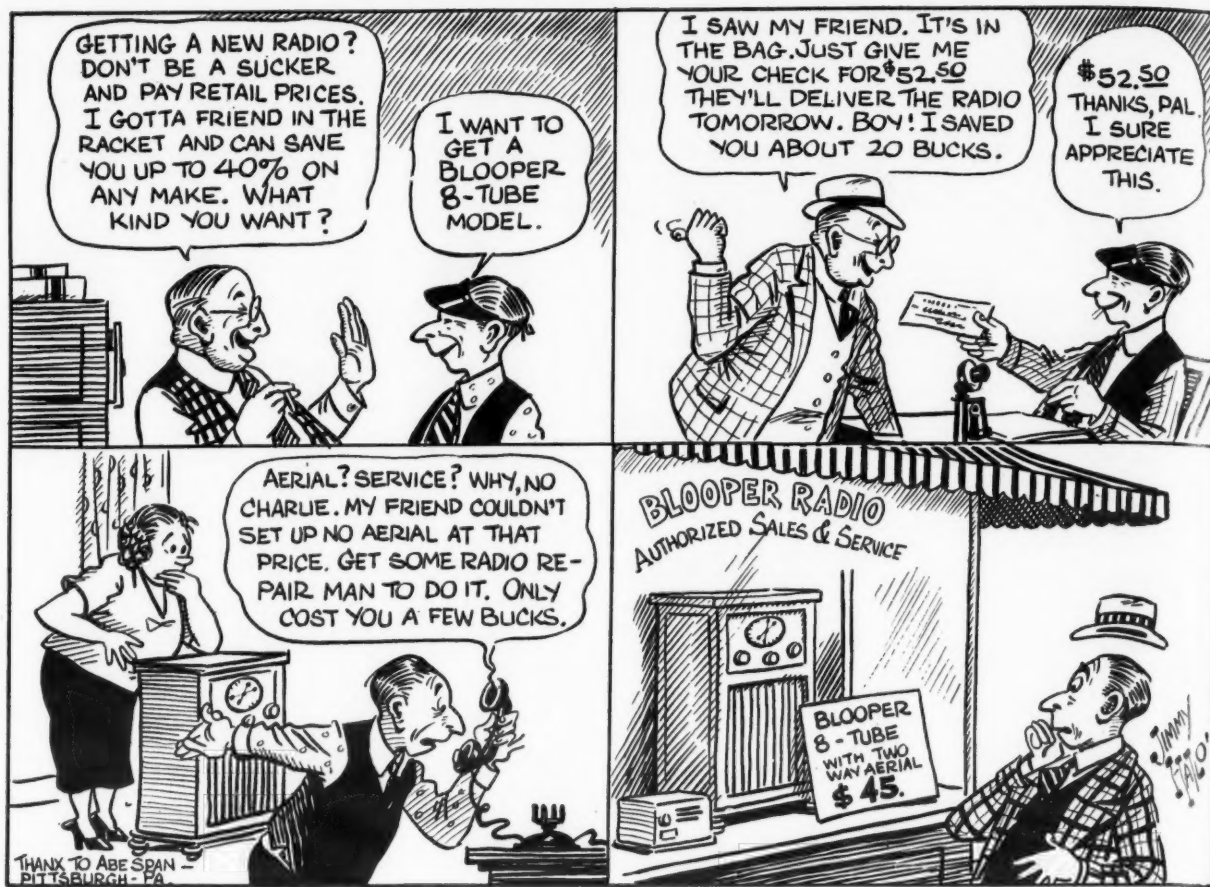
American Way Makes for Security

Were this principle understood people would have infinitely greater faith in their own security. They would see that hope ahead lies not in surrendering this basic formula but in making it work better, and making people understand it better. They would recall with understanding that the high living standard that was enjoyed a hundred years ago by scarcely a tenth of our people is now the common possession of two thirds.

They would see plainly enough why industrial workers seldom migrate from, but always toward, lands of opportunity—why even

Chiselers Never Learn

by Jimmy Hatlo



recently there has been no evident trek back to the countries of the dictators.

Mr. Garrett declared that influences have been allowed to seep into our land that will destroy our American standard of living unless we correct some public misconceptions soon. Six of these "fallacies" were listed and discussed in detail. They are:

"That industry is a device operating for the unholy benefit of a few economic royalists"; "That business went on a 'sit-down' strike to bring on this depression to embarrass the New Deal and to embarrass Labor"; "That the way to spread wealth is to divide it, not multiply it"; "That the machine is driving men into idleness"; "That management is overpaid at the expense of the workers"; and "That bigness in industry is synonymous with badness."

Philosophy Of Individualism No Longer Stylish

One reason that business has not needed in the past to explain the customer advantages of the system, or that free government has not needed similarly to explain itself, is that in earlier days these advantages were extolled in the literature of the time. The benefits were new and vivid.

For most of the 150 years of our existence as a nation our songs and poetry, our school books, our popular literature were written in a vein reminding people that they lived in the best of all lands. Ambition was generally taught as an admirable trait.

The philosophy even took such expression in the Horatio Alger books—naïve, judged by today's standards—as parables on the advantages of working hard and getting ahead. Successful men were objects of popular regard. To call a man a captain of industry was to praise him.

But today the literati are inclined to be pinko, and "the American Way" has only (or chiefly) stodgy defenders—people who, when quoted in the public prints, are merely dismissed as economic royalists out to save their own skins.

Business Must Understand—and Be Understood

Public relations today is the most important item on the agenda of business and industry. It is going to call for the services of psychologists as well as artists in expression. It is calling most of all for men who understand people and for men who are not afraid for people to understand them.

Business and industry are not only fighting for their lives, they are fighting for America and the American people. But the trouble is, the American people don't know it. They have been misled to believe that business men are their enemies. And something needs to be done about that.

The answer seems to be to get industry's story before the public not only well but quickly—to beat the collectivists to the punch. It is a task that cannot wait for stockholders' meetings or for better times. Industry has already lost too much ground; and unless we counterattack on all flanks, the war may too easily end in a rout.

LETTERS

Report On Conditions From Canton, Ohio

The Canton Hardware Co.
1221 Third St., N.E.
Refrigeration Dept.—215 Market S.
Canton, Ohio

Editor:

You are probably interested in conditions in this territory today. Our sales of domestic refrigerators have decreased very materially as compared to a year ago. However, they are beginning to pick up and I look for a good May and June.

Our sales of commercial refrigeration and air conditioning are far ahead of 1937, and although our total volume for our refrigeration department stands today slightly behind 1937 it isn't far because of the slack taken up by the commercial sales. We have pretty fair anticipations of finishing 1938 with a total department volume ahead of 1937.

Our sales to date for May delivery already total ahead of May, 1937 (which was a pretty fair month). Among the larger commercial jobs that we have for delivery this month are a \$3,500 and a \$1,000 air-conditioning installation; a \$2,000 and a \$1,500 Taylor counter freezer installation; and a \$2,200 complete store fixture job. So there are still some people who have money and confidence and courage in spite of present business conditions.

An interesting sidelight as to business conditions here is the employment figures published weekly by the Chamber of Commerce. 1937 employment for the past week was just 50% ahead of 1938. Massillon, our near neighbor, has less than half the factory employment this week as in the corresponding 1937 week. That's the answer to domestic sales sluggishness!

J. W. BROTHERS

Chillicothe, Mo. Dealers Seek Trade-In Answer

Square Deal Electric Co.
Chillicothe, Mo.

Editor:

The electrical appliance dealers of Chillicothe are organizing an association in order to establish a system of better trade practices and they desire some set rule to determine the depreciation of electric refrigerators, ranges, and washers.

As secretary of the association I was instructed to write to REFRIGERATION NEWS asking that if such a system has been established that you send us a sample of same. I will assure you that each dealer in Chillicothe will desire to purchase one in case you have such a schedule available.

We know that the automotive industry have established a depreciation schedule on automobiles and we have heard that there has been a schedule for electrical appliances, especially on refrigerators, ranges, and washers.

G. A. RINGWALD

Answer: There is a good deal of information on trade-in practices published in the appendix to "Appliance Selling Today," a new book that we have published which provides information about selling, promotion, and management methods for dealers.

The book gives a number of schedules of trade-in values that have been used by dealers in various parts of the country.

The book may be obtained free with a one-year subscription to AIR CONDITIONING & REFRIGERATION NEWS or may also be purchased by itself for \$1.00 per copy.

There has also been issued recently "The National Market Index of Trade-In Values For Used Refrigerators." This is available from Herman Hantober, 96 Fifth Ave., New York City, at a cost of \$3.00.

Pilgrim Is Purchaser Of Used Refrigerators

Pilgrim Refrigeration Co.
45-35 50th St.
Woodside, L. I., N. Y.

Editor:

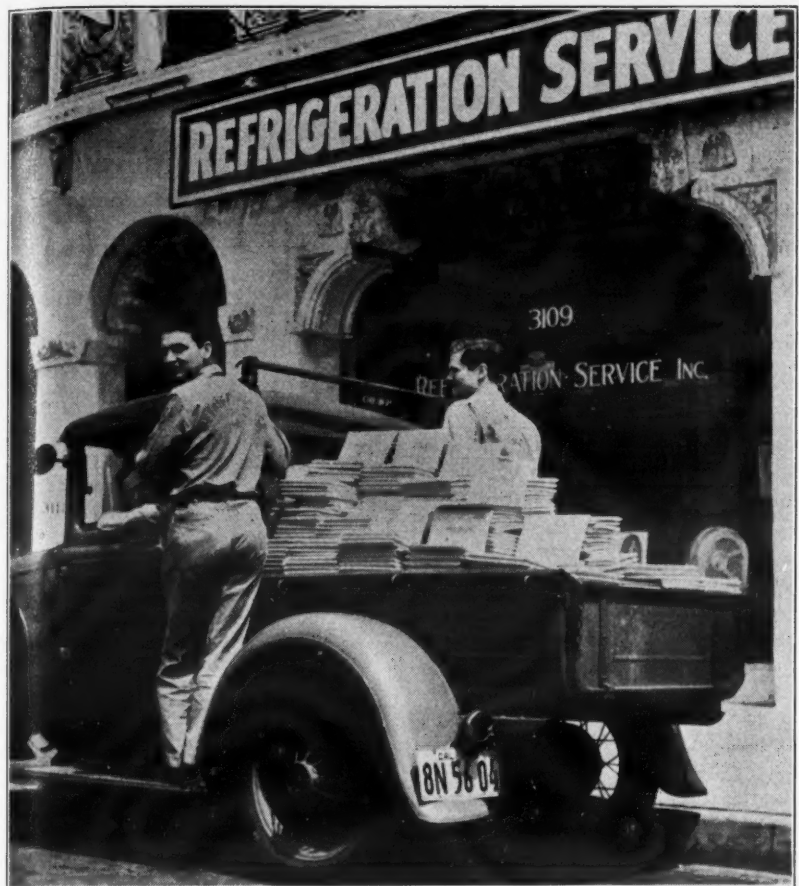
In your March 23 issue of AIR CONDITIONING & REFRIGERATION NEWS in the column marked "Questions" inquiry No. 3194 seeks a purchaser of used household and commercial equipment. You might refer our name to this inquirer and others as a purchaser of this type of equipment.

We have been buying this type of merchandise for the past five years and would be glad to be of service to those requiring it.

JULIAN L. BARTELSTONE

Jobber Activities

A Truckload Of Catalogs



Refrigeration Service, Inc., Los Angeles parts jobber, starts a truckload of its tenth anniversary catalogs on its way to the postoffice. A small truck, perhaps, but still a lot of catalogs.

'Want & Order Book' Included With Catalog Of Los Angeles Jobber

LOS ANGELES — Refrigeration Service, Inc., distributor of refrigeration supplies and accessories, has just issued its tenth anniversary catalog, a 192-page spiral bound volume listing a variety of supplies, tools, and accessories which it has available for service companies and men.

Along with the catalog, the company is sending dealers and service men a want and order book, containing a number of order forms which fold up into self-addressed business reply envelopes.

Sections of the catalog are tabbed for easy reference, and include general sections on belts and supplies, repair shop service, gaskets, and other accessories.

Sectional tab sheets contain a general index of the supplies listed in that particular section, and a complete alphabetic index is at the back of the catalog.

Mississippi Valley R. S. E. S. Group Has Smelt Supper

DAVENPORT, Iowa — Mississippi Valley Chapter No. 1 of the Refrigeration Service Engineers' Society held a smelt fish supper for members and friends at the People's Light Auditorium here recently.

The smelt were sent by Ansul Chemical Co., and were prepared by the chapter's ladies auxiliary.

Anaconda Copper Refrigeration Tubes

Smooth as ice inside!

THE AMERICAN BRASS CO.
FRENCH SMALL TUBE BRANCH
General Offices: Waterbury, Conn.

Refrigeration Jobbers Of New York & Jersey Plan Meeting May 11

NEW YORK CITY—A talk on manufacturer-jobber relations by J. S. Forbes, vice president of Refrigeration Supplies & Parts Manufacturers Association, is scheduled for the meeting of the Metropolitan Jobbers Association of New York & New Jersey, to be held May 11 at 210 Madison Ave. here.

Fourteen New Jersey and New York jobber companies are now members of the association, reports I. R. Sussman, chairman. They are:

Aetna Supply Co., 407 E. 152nd St., New York City; Harry Alter Co., 161 Grand St., New York City; T. W. Binder Co., 29 S. Orange Ave., Newark, N. J.; The Capson Co., 106 Rogers Ave., Brooklyn; Coleman Electric Supply Co., 955 Third Ave., Brooklyn; County Seat Plumbing Supply Co., 214 S. Fourth Ave., Mt. Vernon, N. Y.; Federal Refrigerator Co., 57 E. 25th St., New York City.

Sam S. Glauber Co., 515 E. 79th St., New York City; Sid Harvey, Inc., 138-76 Queens Blvd., Jamaica, N. Y.; Melchior, Armstrong, Dessau Co., 300 Fourth Ave., New York City; Paramount Electric Supply Co., 43 Warren St., New York City; Perry Metal Products Co., 1127 Atlantic Ave., Brooklyn; Premier Electric Motor Co., 92-12 150th St., Jamaica, N. Y.; and Service Men's Supply Co., 1819 Broadway, New York City.

Imperial Brass Issues New Catalog On Supplies

CHICAGO—A new catalog describing the complete line of Imperial refrigeration and air-conditioning valves, fittings, tools, dehydrators, strainers and other accessories has just been issued by Imperial Brass Mfg. Co.

More than 250 different products are listed in the 24-page catalog, with illustrations, sizes, and prices accompanying each.

Three new tube benders, a complete line of soldering and brazing equipment, a line of extra heavy flared fittings, a new universal flywheel puller, and a service kit for hermetically sealed condensing units are among the new Imperial items listed in the catalog.

United Wire Announces New Copper Coil Form

PROVIDENCE, R. I. — United Wire & Supply Co. has developed a new coil form for its "UDD" copper tubing, which it claims makes possible more uniform temper, easier unwinding and straightening, and more compact packing and storage.

The new coiling principle, the company claims, does not throw the coil out of round in coiling, and eliminates flat spots, dents and kinks. Both ends are on the outside of the coil, and the tubing when coiled makes a flat layer, which is said to stand up under rough handling.

High-Torque Capacitor Motor Made By Wagner

ST. LOUIS—Addition of a high-torque double-capacitor motor to its line of single-phase electric motors has been announced by Wagner Electric Corp.

Available in sizes of $\frac{1}{8}$, $\frac{1}{4}$, and $\frac{3}{8}$ hp., the new motor has two condensers of different value, one a high value of capacitance for starting, the other a low value of capacitance for running.

Change in capacitance occurs at approximately 75% full-load speed by means of a centrifugal switch.

Equipped with rigid mountings, the new motor is classified as RZN. With annular resilient mountings, it is listed as type RZNR. The motor is applicable on humidifiers, stokers, refrigerant compressors, and in other equipment requiring high starting torque and constant speed.

Overheat Protection Device Introduced By Spencer

ATTLEBORO, Mass. — Production of a new disc-operated overheat protection thermostat for use in fractional horsepower motors has been announced by Spencer Thermostat Co. here.

The unit consists of a small thermostat bimetal disc placed next to a heater wire. Contacts, welded to the disc, provide positive action, it is claimed, and being placed in series with the line circuit, the thermostat, when open, breaks the circuit.

ALCO VALVE "STRAIGHT LINE" REFRIGERANT CONTROL Increases Evaporator Capacity and Efficiency

ALCO THERMO VALVES are engineered to definitely confine the swing in the line of complete evaporation to the narrowest limits—to utilize the maximum amount of coil surface at all times. This gives increased capacity and highest efficiency to any evaporator installation.

On the other hand, ordinary control allows wide swings in the evaporator—as shown in the diagram—permitting liquid to return to the compressor one instant and starving a good portion of the coil the next instant.

Alco gives you "straight line" control, for every Alco Thermo Valve is designed to produce the highest possible evaporator efficiency. The elimination of excessive friction, proper proportioning of component parts, correct speed of response, and proper flow characteristics are all factors in the design and manufacture of Alco Thermo Valves (which provide this close control).

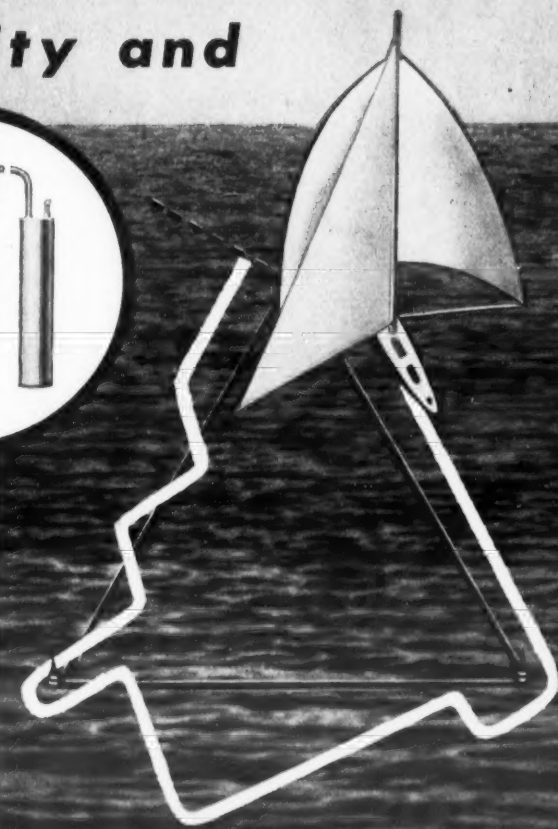
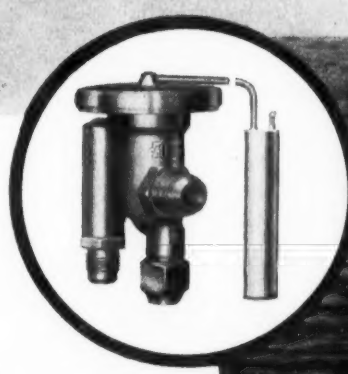
Years of leadership in the design and manufacture of the most accurate refrigerant controls have resulted in wide use and acceptance of Alco Thermo Valves throughout the refrigerating and air conditioning industries.

Write for information and bulletin describing the Alco line of engineered refrigerant control.

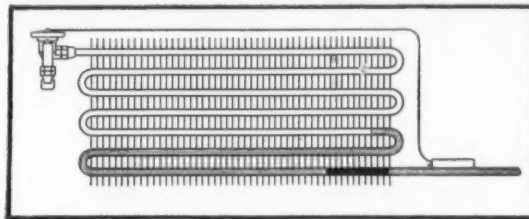
ALCO VALVE COMPANY, Inc.
2620 BIG BEND BLVD. ST. LOUIS, MISSOURI

ENGINEERED REFRIGERANT CONTROLS

FOR HIGHEST EVAPORATOR EFFICIENCY



"Zig-zag" control may win in a yacht race, but it loses money in refrigerant control.



Short black line illustrates limited Alco swing, shaded portion of coil shows extent of swing resulting from ordinary type control.

Standard Brass Sets Up As Supplier In Houston

HOUSTON, Tex.—Standard Brass & Mfg. Co. recently has entered the wholesale refrigeration parts jobbing business in this territory, with headquarters here and branch stores in Beaumont and Port Arthur, Tex. Allan L. Cody of the company's refrigeration supply division reports that an appropriation of about \$15,000 has been made for investment in supplies for the main store, in addition to separate appropriations for the Beaumont and Port Arthur branches.

Within a short time, the company plans to have its first catalog off the press and ready for distribution.

SUPPLIES • PARTS • TOOLS
Refrigeration — Air Conditioning
Oil Burner — Stoker
Write for Out New Catalog
VINCENT BRASS & COPPER CO.
100 North Second St., Minneapolis, Minn.

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engineered by
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8790 Grinnell Detroit, Mich.

REMOVES HEAT QUICKLY

... so essential to milk protection

Artic
(DU PONT METHYL CHLORIDE)

For quick cooling, ice cream cabinets and milk coolers are equipped with ARTIC-charged units. In servicing these units, do as the manufacturers have done — use ARTIC (du Pont Methyl Chloride).

Stocks in standard containers in principal cities for prompt delivery.



E. I. du Pont de Nemours & Co., Inc.
THE R. & H. CHEMICALS DEPT.,
Wilmington, Del.

ARTIC THE PREFERRED METHYL CHLORIDE FOR SERVICE WORK

Air Conditioning

Factors In Load Calculations For A General Office Installation

BY F. O. JORDAN

Determination of the amount of heat which an air-conditioning system must be capable of removing is one of the first, and principal problems confronting the engineer who is estimating or designing a comfort-cooling job.

In an article, of which the information published in this issue is the first instalment, F. O. Jordan outlines a method for estimating heat loads which incorporates certain up-to-date suggestions for field engineering practice.

Individual Nature of Problem

In some details every air-conditioning installation constitutes an individual problem in itself. This is particularly true of the commercial installation running into several tons of refrigerating effect.

This lack of complete uniformity in installations must not be construed to mean that standardized methods of air-conditioning engineering should not or cannot be used, for if the air-conditioning industry is to expand, it must keep the cost of its product within reach of the customer.

Since the cost of field engineering is one item for which consumers must pay, engineering costs must be prevented from becoming excessive. One of the ways of keeping down engineering costs is to develop, adopt, and make use of standardized and simplified field engineering design methods.

However, commercial air-conditioning field engineering cannot be a 100% "cut and dried" proposition in the way that the design of an automobile becomes a routine affair as soon as the fundamental laws of automotive science have been determined, and the desires and tastes of the buying public have been correctly surmised.

For example, the air-conditioning dealer's field representative cannot hope merely to open up his data book, apply this and that factor with mathematical certainty, and come home as a matter of course with the one and only correct answer. For although he may and can have factors known to apply under certain circumstances and combinations of circumstances, the engineer must be

able to recognize the pertinent circumstances so that he may select the factors which apply to them, and he must use a certain degree of judgment in their application.

A General Office Installation

The installation under consideration in this article consists of summer air conditioning for the top story of a typical masonry structure with flat roof. The space to be air conditioned is devoted to a general office, and three adjoining private offices.

With this type of installation one principal problem to be solved is the accurate determination of sun effect, not the maximum intensity upon the exterior surface of the building, nor the total load during the day, but the maximum quantity of heat that can arrive within the conditioned space within the period of one hour. With this type of occupancy, the number of occupants generally is fairly well known.

Occupancy

As with air conditioning in the store, home, or elsewhere, the occupancy upon which the ultimate equipment selection is based is, in the last analysis, the number of occupants for whose comfort the owner is willing to pay.

On this particular installation the occupancy in the general office space is quite well fixed at about 125 by the number of desks located there, as there is no reason why many additional people should visit the general office for more than a few minutes at a time.

In each of the private offices, design is based upon the presence of two "hour occupants," or the equivalent of two occupants remaining in the room for the full hourly period. While several persons might be present during an hour, in general, their stay will be for but a fraction of the

hour, and not many persons will be present simultaneously, so that the maximum effect rarely should exceed that due to the presence of two occupants for a full hour.

Therefore, the owner did not feel justified in spending his money for equipment with excess capacity to maintain comfort for more than this number of occupants, as it will be exceeded rarely if at all.

Physical Data

General layout and dimensions of the conditioned space and the layout are shown by Fig. 1, which is a floor plan.

Physical data for this installation are as follows:

Windows—steel sash with awnings where exposed to sun effect.

Outside walls—12-inch cinder blocks plastered inside, with 4-inch brick veneer outside.

Interior partitions—6-inch tile, plastered both sides.

Floors—10-inch solid concrete.

Roof—6-inch solid concrete, 4-ft. attic space, with suspended lath and plaster ceiling.

Rooms at north end and the floor below the conditioned space are not air conditioned.

Open stair well at north end which was enclosed to prevent cold air from pouring down from the air-conditioned general offices to the unconditioned space below.

Failure to take care of this item would result in a series increase in load upon the air-conditioning equipment because of the excessive loss of relatively cold conditioned air down the stair well.

Open dump waiter at east wall required an air enclosure for the same reason.

Dimensions of the various conditioned rooms are as follows:

General office—54 feet wide x 76 feet long by 12 feet high.

All three private offices—18 feet wide by 18 feet long by 12 feet high.

Although there is a certain amount of coming and going of transient occupants, occupancy has been reduced to a basis of occupants remaining for a full hour per hour, so that the air-conditioning load is based upon an equivalent of 125 occupants for duration of an hour per hour, while occupancy of each private office

has been assumed to be two full hourly occupants each. This occupancy basis has been taken up with the owner and agreed upon by him, and has been duly written into the guarantee.

Loads are based upon introducing not less than 1,200 cu. ft. of outside air per occupant per hour in the private offices, and not less than 900 cu. ft. per occupant per hour in the general office space.

The entire building is fully exposed to sun effect throughout the day, and is located in one of the larger northern cities.

The occupancy period begins at 8:15 a.m. and ends at 5:00 p.m. in the general office space, and begins at 8:15 a.m. in the private offices. However, any or all of the private offices may be used until late at night.

DESIGN CONDITIONS

Outside—95° dry-bulb temperature and 70° dewpoint temperature.

Inside—80° dry bulb, 60° dewpoint.

Because they are located at the north and will lose heat to the conditioned space, the rooms to the north will not exceed 90° dry-bulb temperature.

The floor below will not exceed 90° dry-bulb temperature, because it is not a top floor and will lose heat to the conditioned space.

Sun and Transmission Loads

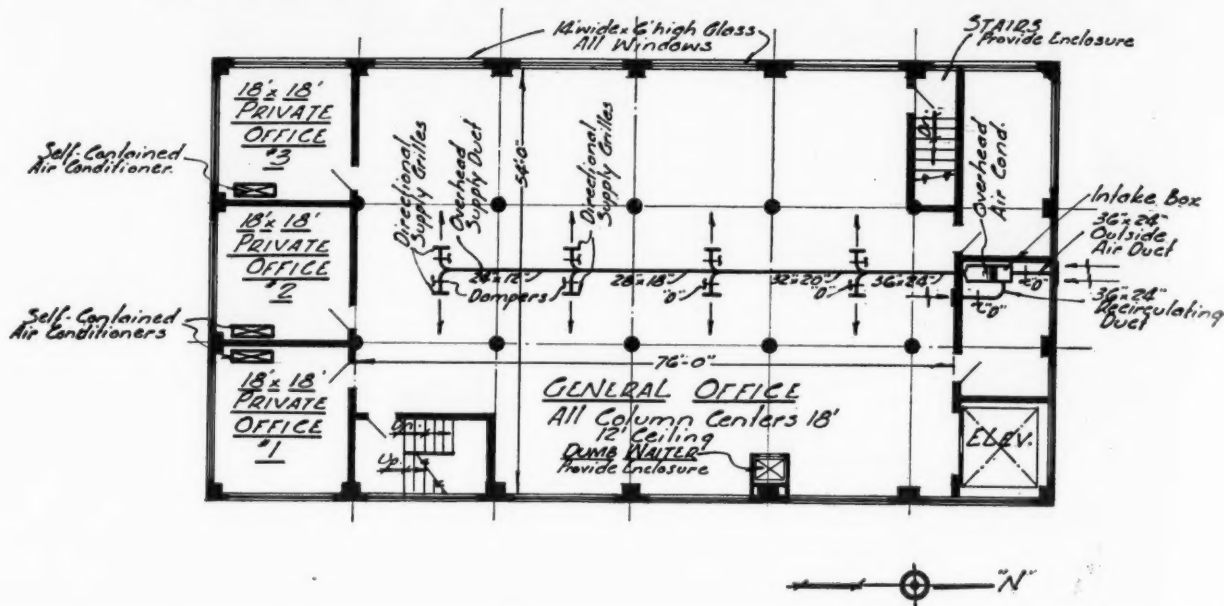
Sun and transmission loads are important in a project of this type, because it is in use during the daytime when the sun is shining and outside temperatures are high, and because occupancy is relatively light so that sun and transmission load form a considerable proportion of the total heat load.

Generally, in case of an installation located just under a large flat roof such as this one, a safe rule is to figure sun load only upon the roof and upon the windows of the south or the west exposure, depending upon whether the south or the west windows are the larger. Transmission load only is figured for other exposures.

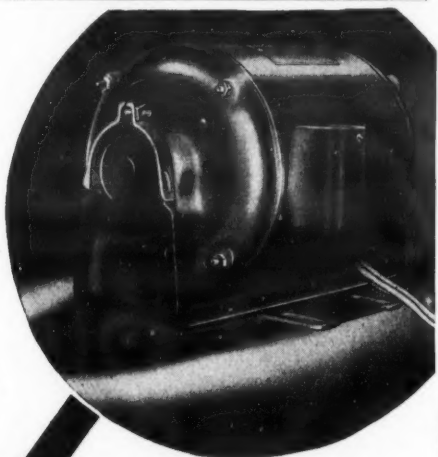
Logic behind this rule is that it requires from two to four hours for sun load to pass through the usual masonry roof, so that the noonday

(Continued on Page 13, Column 1)

Fig. 1—Plan Of Space To Be Conditioned



GUARD THE VITAL



SPOT With a DEPENDABLE Wagner Motor

Strengthen your selling force by selecting the proper motor for your refrigerant compressor. The selection

of the proper motor for that job is of first importance, since the failure of the motor means the failure of the apparatus which it drives. Motors for refrigeration and air-conditioning compressors must be especially adapted to meet the requirements of this type of service. Wagner repulsion-start-induction motors are preferred because they have the necessary mechanical and electrical characteristics for quiet, smooth operation, and dependable, trouble-free service. You can profit with increased sales by explaining to prospective customers these essential features of Wagner motors, a few of which are explained below.

All Wagner rotors are dynamically balanced to insure freedom from vibration. Less vibration means less noise and longer life to motor and parts.

Wagner stator frames are of rolled steel—strong, rigid, will not get out of alignment. Well-insulated and carefully treated windings that are securely wedged in place insure long, trouble-free electrical performance.

Concentrically machined endplates and diamond-bored bearings—insure true alignment of bearings, perfect centering of shaft and uniform air-gap. Smooth operation of motor is thus assured.

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'Time Lag' For Sun Effect Important In Obtaining Correct Load Figure

(Continued from Page 12, Column 5) peak sun load upon the exterior surface of the roof penetrates to the conditioned space along in the afternoon when the sun is getting a good "shot" at the west windows. However, sun load should be based upon the area of the south windows if their area is the larger, as a factor of safety.

Of course the sun no longer shines upon the east windows in the afternoon when the roof sun load is gaining access to the conditioned space through the masonry roof, so that these two loads should never be added.

EAST WINDOWS

Therefore, the logical procedure with east windows if no west or south windows exist, is to figure sun load only for the east windows or for the roof, depending upon which load is the heavier. Sun load is not figured for both south and west windows, because at any time when the sun is shining through both, its effect upon either is far below maximum because of the angularity of impact. Therefore the maximum effect is when the rays are practically perpendicular to the larger windows.

Of course the exact method is to figure the "lag" or the time required for sun effect to pass through the

construction forming each exposure, and add this time or period to the time of day when maximum intensity of sun effect occurs upon the outside surface of the exposure to determine the time of day when the load will gain access to the interior. In this way the engineer knows just which loads to add together.

For example, the lag of the 6-inch concrete roof may be computed approximately from the equation: (Equation No. 1)

$$\text{Lag (in hours)} = 0.15 \times \text{Weight (per sq. ft. of construction)} \times \text{Specific Heat (of material in construction)} \times \text{Overall Resistance (to heat flow), to be,}$$

$$\text{Lag} = \frac{0.15 \times 72 \times 0.2}{.64} = 3.4 \text{ hrs.}$$

Since maximum sun intensity on the exterior surface occurs at 12:00 noon, peak load resulting from roof sun effect would enter the conditioned space around 4:00 p.m., when sun effect upon west windows is maximum. Therefore, sun effect for roof and west windows should be added together.

However, the lag of the masonry portion of the west wall may be computed to be several hours, so that its sun load will be postponed for several hours after 4:00 p.m., or

until long after the occupants have gone home. Sunload even on the south wall is not considered, as the lag of the heavy masonry construction will so distribute sun load that it need not be considered when a heavy roof sunload exists, as in this case.

Sun effect may be estimated in various ways, such as: (1) the well-known method of assuming greater differentials between outside and inside temperature; (2) the solar radiation method; (3) the more simple factor method in which sun plus transmission load is estimated by multiplying transmission load by a simple factor which has been derived from tests.

TRANSMISSION TABULATION

The tabulation of transmission and sun effect computations for the general office is shown in Table 1, using the increased temperature differential method for estimating sun plus transmission for the roof.

For Private Office No. 1, sun effect plus transmission are used for roof and south glass, transmission only being used for other surfaces. The tabulation of computations is shown in Table 2.

For Private Office No. 2, sun effect plus transmission are used for roof and south glass, transmission only being used for other surfaces.

The tabulation of computations is shown in Table 3.

For Private Office No. 3, sun effect plus transmission are used for roof and west glass, transmission only being used for other surfaces.

The tabulation of computations is given in Table 4.

(To Be Continued)

Table 1—General Office Computations

Exposure	Area	Coefficient	Temp. Diff.	Load B.t.u./hr.
North partition	650	0.40	10	2,600
East glass	275	1.10	15	4,550
East Wall	445	0.30	15	2,000
Stair partition	265	0.40	10	1,060
West glass	335	35*	..	11,700
West wall	530	0.30	15	2,380
Roof	3,760	0.37	45	62,500
Floor	3,760	0.49	10	16,500
Total Load				103,290

*B.t.u. per hour at differential.

Table 2—Data For Private Office No. 1

Exposure	Area	Coefficient	Temp. Diff.	Load B.t.u./hr.
North stair partition	120	0.40	10	480
East glass	85	1.10	15	1,400
East wall	130	0.30	15	585
South glass	85	35*	..	2,980
South wall	130	0.30	15	585
Roof	325	0.37	45	5,410
Floor	325	0.49	10	1,595
Total Load				13,035

*B.t.u. per hour at differential.

Table 3—Data For Private Office No. 2

Exposure	Area	Coefficient	Temp. Diff.	Load B.t.u./hr.
South glass	85	35*	..	2,980
South wall	130	0.30	15	585
Roof	325	0.37	45	5,410
Floor	325	0.49	10	1,595
Total Load				10,570

*B.t.u. per hour at differential.

Table 4—Data For Private Office No. 3

Exposure	Area	Coefficient	Temp. Diff.	Load B.t.u./hr.
South glass	85	1.10	15	1,400
South wall	130	0.30	15	585
West glass	85	35*	..	2,980
West wall	130	0.30	15	585
Roof	325	0.37	45	5,410
Floor	325	0.49	10	1,595
Total Load				12,555

*B.t.u. per hour at differential.



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'Keep In Step By Putting In Cooling' New Orleans Realtors Are Told

NEW ORLEANS—Contractors can no longer "buck the trend of the times" by failing to equip new homes with air conditioning and other electrical devices, A. J. Brock, New Orleans General Electric official, said in a talk before the Realtors Association of New Orleans.

"Housekeeping is our greatest single industry," Mr. Brock said, "but it is the worst engineered. Although American housewives spend \$30,000,000 annually, there are still 10,000,000 homes in the United States without electricity."

"Just as Henry Ford had to abandon his model T because times changed, so real estate men and others interested in home furnishing can't buck the trend by building homes without full electrical equipment," he declared.

Radio Headquarters In India To Be Cooled

CALCUTTA, India — Air-conditioning equipment for the offices and a dehumidifying and cooling plant for the studios are included in the plans for a new building to house the headquarters of All-India Radio.

The project, estimated to cost about \$250,000, has been submitted to the government of India for approval.

Information Bureau For Public Is Established By Buffalo Council

BUFFALO—Establishment of an information bureau on summer and winter air conditioning for home owners, builders, store owners, and other interested persons has been announced as the first step in the 1938 activity of the Air Conditioning Council of Western New York.

The information service is free, points out Walter P. Davis, executive secretary of the council, and the council has nothing to sell.

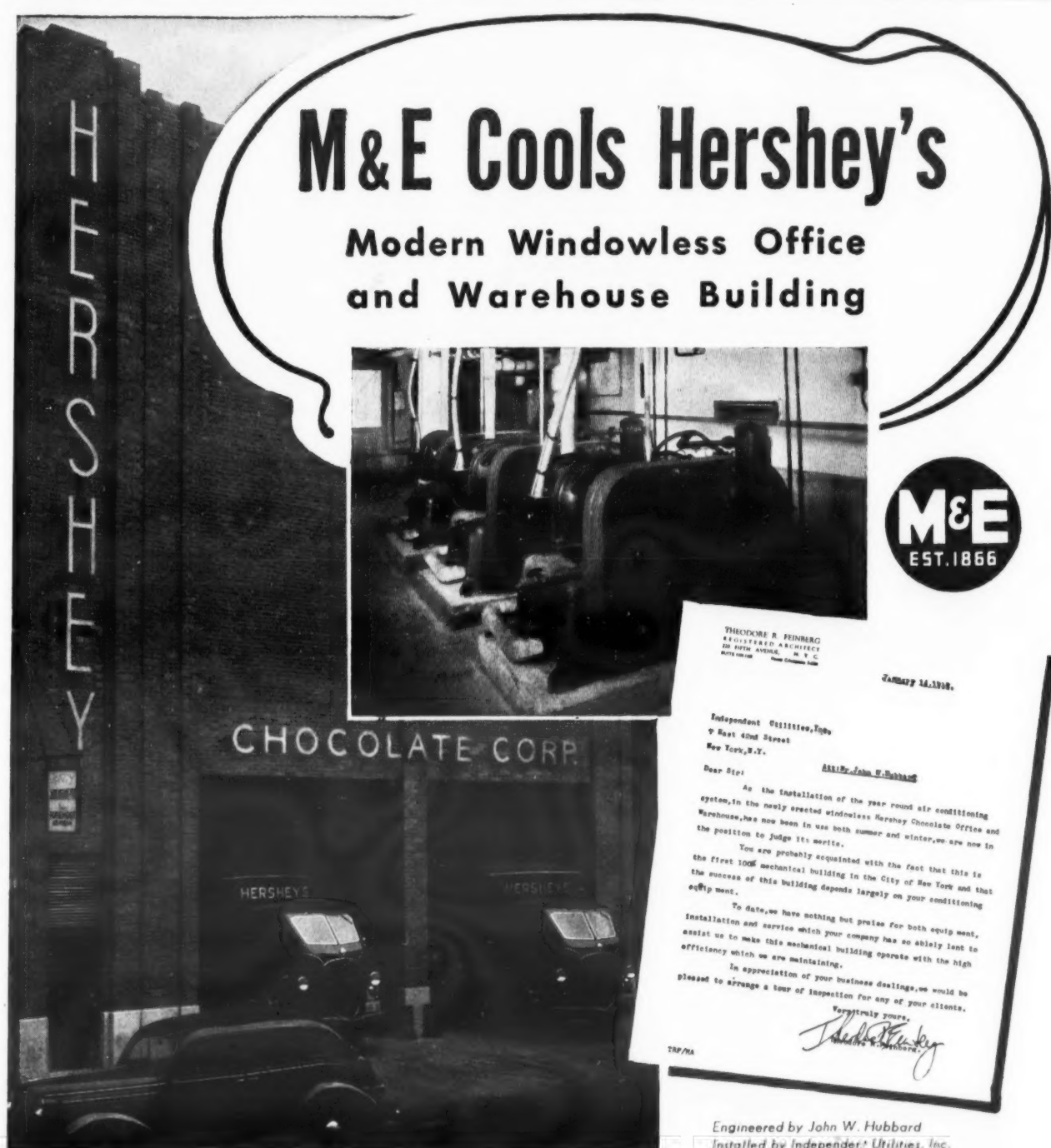
"A prospective purchaser of summer or winter air conditioning can now obtain information on an impartial basis to assist him in determining what kind of system he should have for his particular home or business," Mr. Davis stated.

"While the council service will not include layouts or specifications, it will assist materially in solving purchasers' particular problems."

New officers of the council recently elected, besides Mr. Davis, are: Roswell Farnham, president; E. R. Cooney, vice president; R. H. Mollenberg, treasurer. Council headquarters are in the General Electric building here.

Small Town Air Conditioning

DUNBAR, W. Va.—General Roofing & Air Conditioning Corp., Charleston, W. Va., installed General Electric air conditioning in the new Mays funeral home here.



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If yours is the responsibility for selection or operation of equipment for refrigeration or air conditioning service . . . investigate M & E Compressors.

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Service Methods

Service Complaints On Servel Hermetic Units and Suggested Remedies

BY K. M. NEWCUM

Editor's Note: This is the second and concluding instalment of an article which gives service instructions on the Servel Hermetic household electric refrigerator.

This article is one of several providing service instructions on "specific makes and models" which will be put together to make up Manual No. 4 of the Master Household Refrigeration Service Manuals, written by K. M. Newcum.

Illustrations referred to in this instalment were published in the first instalment which appeared in last week's issue.

Because the Servel Hermetic is not classified under one of the fundamental types of systems, as given in chapter 9 of Master Service Manual No. 2, a series of troubles and remedies covering the specific service problems involved with the Hermetic is given as follows:

If the system does not operate normally, one of the following conditions will exist:

1. Unit cannot be started when evaporator is warm.

2. Unit will operate continuously but evaporator will not frost.

3. Unit will operate continuously. Refrigerator temperature not satisfactory.

4. Unit will cycle but evaporator unit will defrost.

5. Unit will cut off on thermal link after operating on normal cycle.

Since it is possible for conditions 1, 3, and 4 to be the result of an in-

correctly adjusted or inoperative thermostat switch assembly, an outline of symptoms of and methods of testing for possible thermostat switch trouble is given in a later part of this article.

Symptoms of Possible Thermostat Switch Trouble and Remedy

1. If unit cannot be started when evaporator is warm.

Check the overload relay by turning the temperature regulator to off position on dial and then returning it to chilling position.

See that electric cord is properly connected to house circuit and refrigerator.

If unit still does not operate, remove electric connection from refrigerator and test line with a test lamp. If line is found to be dead, trace back to house circuit for trouble. A loose connection, circuit fuse blown, main fuse blown, or broken wire would cause this trouble.

If test lamp lights and still unit will not run, remove back panel and switch cover. If the thermostat contacts (Fig. 328) are open and the evaporator is warm, the thermostat bellows has lost its charge. The complete thermostat switch assembly should be replaced.

If thermostat contacts are closed, replace electrical connection in switch and note, when this is done, whether the armature assembly causes contact at contacts No. 5, Fig. 329. If the armature assembly is not instantly drawn up to make contact, the trouble is within the starting relay assembly

and the entire thermostat switch assembly should be replaced.

If the unit will not run due to defects within the unit itself or because of a low voltage condition, the resulting excessive flow of current through the relay assembly will cause the armature to lift and contact to be made at contact points, No. 5. The contacts at point 5 will "make" in a chattering or fluttering manner until the thermal link in the thermal overload switch breaks the circuit. The circuit is broken by the softening of fusible metal in pin No. 4, Fig. 329. (This is the protection device incorporated in this control switch.)

If after resetting the temperature regulator a number of times this condition continues, test for low voltage.

NOTE: The thermal link should be allowed to cool for several minutes before attempting to reset temperature regulator after machine has been stopped by action of the overload switch.

Test for Low Voltage

Connect a voltmeter in the circuit between the unit and electrical outlet. (A Weston No. 575 Appliance Tester is recommended for this purpose.) Start the unit. Check voltage as the unit starts. If the wiring circuit is inadequate a definite voltage drop will be noted. A 10% drop is allowable—a greater drop should be called to the attention of the local power company and correction must be made before satisfactory operation of the Hermetic can be expected.

If voltage is up to normal as disclosed by the voltmeter test and thermostat tests satisfactory as under 1, but unit still refuses to operate, the unit will have to be changed.

2. Unit operates continuously, but evaporator will not frost.

The difficulty is within the unit and entire unit should be replaced.

3. Unit operates continuously; refrigerator temperature not satisfactory.

If this condition exists remove the center ice cube tray (top tray in the SB-3A and SC-3C), and with a reliable thermometer check the temperature on the aluminum conductor plate. The thermometer should be placed on the conductor plate so that the temperature can be read without removing the thermometer from the evaporator.

Set the temperature regulator at "Chilling." Close the cabinet door and after about 20 minutes the thermometer should indicate approximately 14° F.

(Note:—On HS-15C units and larger the thermometer should be placed on bottom of the large tray compartment—four inches from the front. Under

these conditions the thermometer should record approximately 19° F.)

If the temperature is considerably below this point, the entire thermostat switch assembly should be changed. If the temperature is considerably above this point the trouble, no doubt, is within the unit itself and the unit should be changed.

4. Unit cycles but chilling unit defrosts.

A reliable general criterion of proper operation of the thermostat switch is the temperature on the conductor plate. However, where the unit is cycling either too often or apparently at too long intervals, the temperature on the conductor plate should read approximately 14° F. at the time the machine unit cuts off. Any wide variation from this will indicate thermostat trouble and the thermostat switch assembly should be changed.

5. Unit cuts off on thermal link after operating on normal cycle.

If a unit is found to be cutting off on the thermal link, after operating on normal cycles, the difficulty can be caused by one or more of the following conditions:

a. **Low voltage.** This should be checked as previously indicated with an approved voltage tester, or a Weston model 575 refrigerator tester, at the start of the operating cycle.

b. **Thermal link rating.** It is possible that the thermal link on the affected unit is of too small a rating. If so, it should be replaced with a link of the proper size as shown in table 1.

c. **Poor contact at the relay contact points.** It is possible for the leaf on which the relay contact points are mounted to be bent or even loose, resulting in a poor contact when the relay core is drawn up into the relay at the start of the operating cycle.

If this condition exists, arcing will occur. A visual inspection should be made (with the connection cord disconnected) to make sure that sufficient pressure is exerted by the contact leaf to effect good contact when the relay core is raised manually.

If poor contact is evident, and the condition cannot be corrected by tightening the screw which holds the contact leaf in place, the entire thermostat switch should be replaced.

Even though good contact seems apparent, a replacement thermostat switch should be connected electrically (although not installed and mounted into place), and proper operation attempted, using this replacement thermostat switch before the unit is replaced as defective.

d. **Unit failure.** In some instances, this trouble could be due to something wrong within the unit itself. If so, this unit would eventually fall under the classification No. 1, namely,

"Unit cannot be started, even though evaporator is warm." As a reasonably accurate check on the latter possibility, however the following tabulation of wattage consumption of the various model units should be considered. It should be understood, of course, that under extremely high temperature conditions the wattage consumption would be in the upper brackets.

Wattage consumption to be expected under normal operating conditions, and in room temperatures of from 75 to 100° F. for the several models is as follows:

HS-10F 160 to 180 watts.
HS-10E 160 to 180 watts.
HS-10D 170 to 190 watts.
HS-10C 175 to 195 watts.
HS-10G 175 to 195 watts.
HS-12A 160 to 210 watts.
HS-15C 195 to 220 watts.
HS-15A 260 to 280 watts.
HS-15B 260 to 280 watts.

To Remove and Replace Thermostat Switch Assembly

1. Disconnect attachment plug.
2. Remove ice cube trays and the aluminum conductor plate.
3. Loosen screw securing thermostat tube clamp to side of chilling unit with the aid of a short screw driver.
4. Carefully straighten out the thermostat tube so that the switch can be removed from the back.
5. Remove back panel of cabinet by removing the screws which hold it in place, and then remove thermostat switch cover.
6. Remove cable clamp, also the three wires that lead from the motor—black, red, and white (Fig. 329).
7. Remove the three screws which hold the thermostat assembly to the unit frame.
8. Remove thermostat assembly by pulling straight out. Then after straightening thermostat tube of replacement thermostat assembly, insert the thermostat tube through the back of the unit, engaging temperature regulator rod. Fasten the assembly to the unit back with the three mounting screws.
9. Secure the cable to unit motor on the replacement thermostat assembly with the cable clamp, and connect the black, red, and white wires to their respective terminals (Fig. 329).
10. Bend the thermostat tube so that it can be clamped to the chilling unit with the thermostat tube clamp. Secure intimate contact of the thermostat tube to the evaporator by tightening the clamp screw securely.
11. The unit will then be ready to operate.

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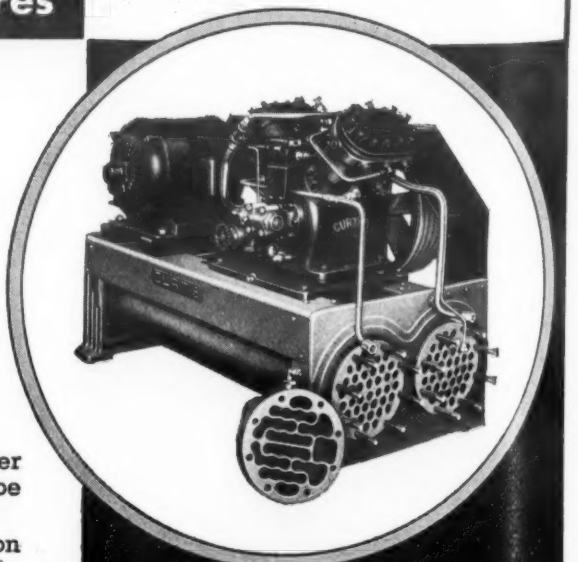
CURTIS REFRIGERATING MACHINE CO.

Division of Curtis Manufacturing Co.

1912 KIENLEN AVENUE

ST. LOUIS, MO.

15 h.p. unit with head of condenser shell removed showing interior tube construction.



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The books pictured on this page offer you a practical course of study in refrigeration and air conditioning at the lowest cost. Whether you are interested in household refrigeration or commercial refrigeration or air conditioning, or all three, there are books to meet your needs.

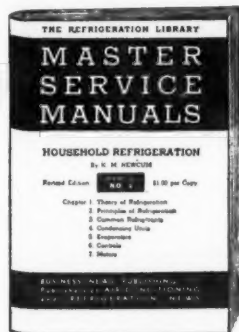
These books are written by experts in the fields they cover—by men who know not only the theory of their subjects but who have spent years of actual practice in the field. The ideas offered in these books represent the cumulative knowledge

of technical training and field study, boiled down and presented in clear, understandable terms. They are practical books written in a practical manner. The beginner will find nothing confusing or difficult to understand in them. The experienced service engineer, dealer, and air-conditioning contractor will find them extremely valuable as reference texts. They are chock-full of time saving hints and discuss clearly and fully actual problems encountered in the field.

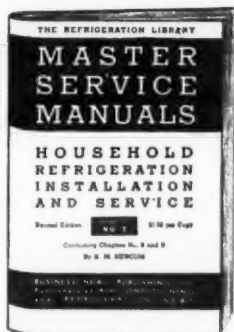
As a practical course of study for the beginner,

it is suggested that the Master Service Manuals on Household Refrigeration be studied first, followed by the Master Service Manuals on Commercial Refrigeration and the series of air-conditioning books. Any of these books may be purchased separately for only \$1.00 per copy.

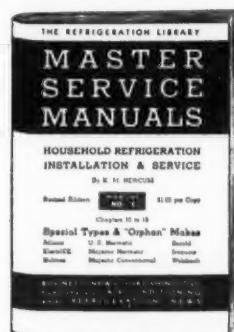
Start now to broaden your knowledge of refrigeration and air conditioning through the Refrigeration Library. Your investment is only \$1.00 per book. The leading jobbers listed below carry these books in stock for your convenience.



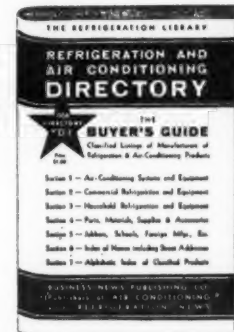
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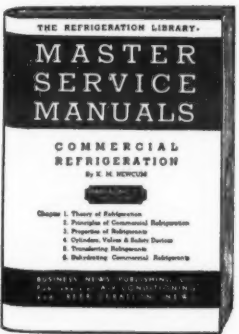
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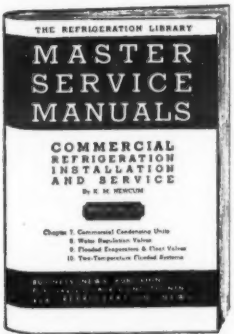
MANUAL NO. 3—Detailed data on methods of servicing several special types of refrigerators (now classified as "orphan makes") including Allison, Electric, Holmes, U. S. Hermetic, Majestic Conventional, Socold, Iroquois, and Welsbach. 144 pages. Price \$1.00.



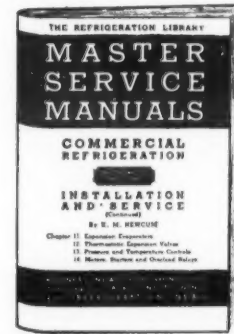
DIRECTORY NO. D-1—The first complete revision since 1935, listing manufacturers of all types of household and commercial refrigeration and air-conditioning equipment, parts, accessories, materials, supplies, and tools. Complete list of jobbers. 252 pages. Price \$1.00.



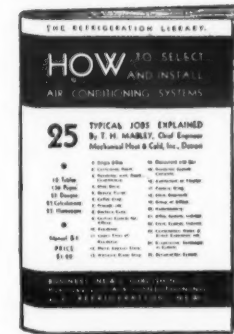
MANUAL NO. C-1—The theory and principles of refrigeration presented in a more complete manner than in previous manuals. Properties of refrigerants, including effect on lubricating oils. Types of refrigerant cylinders, valves, and safety devices. Drying and transferring refrigerants. 96 pages. Price \$1.00.



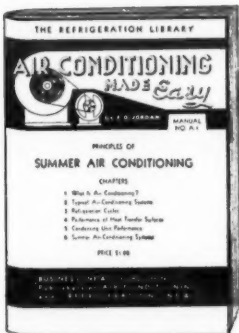
MANUAL NO. C-2—Installation and service methods. Detailed information on commercial condensing units and their component parts. Water regulating valves, both electric and pressure-actuated types. Flooded evaporators and low side float valves. Two-temperature low side float systems. 112 pages. Price \$1.00.



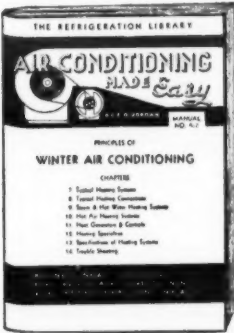
MANUAL NO. C-3—Installation and service methods continued. Chapters on expansion evaporators, including blower units and all modern types. Thermostatic expansion valves. Pressure and temperature controls. Refrigerant control valves. Electric motors, starters, overload relays. 144 pages. Price \$1.00.



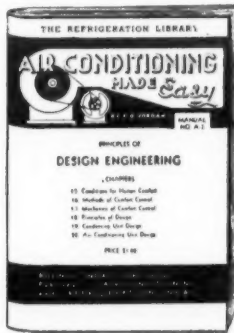
MANUAL B-1—Twenty-five typical air-conditioning jobs explained and estimated. Especially valuable for contractors, dealers, and prospective users wanting brief and condensed information on how to select and install air-conditioning equipment for typical commercial jobs. 136 pages. Price \$1.00.



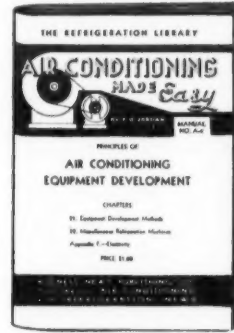
MANUAL NO. A-1—The principles of summer air conditioning. Typical air-conditioning systems, refrigeration cycles, performance of heat transfer surfaces, condensers, and condensing unit performance. 112 pages. Price \$1.00.



MANUAL NO. A-2—The principles of winter air conditioning. Typical heating systems and heating connections. Steam and hot water systems, hot air heating, heat generators and controls, specifications, trouble shooting. 104 pages. Price \$1.00.



MANUAL NO. A-3—Principles of design engineering. Conditions for human comfort, methods of comfort control, mechanics of comfort control, principles of design, air-conditioning unit design. 112 pages. Price \$1.00.



MANUAL NO. A-4—Principles of equipment development. Methods of developing air-conditioning equipment with numerous performance charts. Description of miscellaneous types of refrigeration machines. Electrical theory. 112 pages. Price \$1.00.

CARRIED IN STOCK FOR YOUR CONVENIENCE BY THESE LEADING JOBBERS

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311 Peachtree St., N. E.

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Melchior, Armstrong,
Dessau Co., Inc.
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A. E. Borden Co.
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Root, Neal & Co.
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Henry W. Dick & Co.
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245 S. 11th St.

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Refrigeration Service, Inc.
3109 Beverly Blvd.

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S. W. H. Supply Co.
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Milwaukee, Wis.
Refrigeration Specialty Co.
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C. P. Payson Co.
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Refrigeration Supplies, Ltd.
49 Courtenay Place

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Bilbao
Maria Diaz de Haro, 48-50
Suministros Frigorificos, Ltd.

Major Appliances

Northern States Power Passes Goal On Ranges

MINNEAPOLIS—Exceeding in 45 months the sales quota on electric ranges and water heaters established for a five-year campaign, Northern States Power Co. and cooperating appliance dealers in the utility's territory are looking forward to a continued sales upswing.

In April, 1934, the power company inaugurated its five-year plan to double the number of electric ranges on its lines and multiply by nine the number of water heaters.

The goal was 20,000 ranges and 9,000 water heaters, of which only 3,000 were to be of the automatic storage type.

By the end of 1937, total sales were 23,169 ranges and 14,112 storage type water heaters. Cooperating dealers had sold 37% of the ranges and 29% of the water heaters. Before the five-year plan, they had sold very few ranges and no water heaters.

The year 1937 in itself was the most successful sales year in the campaign up to the present time. Volume was 8,650 ranges and 4,659 water heaters. This represented an increase over 1936 sales of 21% in ranges and 12% in water heaters.

Oregon Dealers Using 'Slogan Contest' To Push Range Sales

SALEM, Ore.—Appliance dealers of the Salem area are holding a six weeks' "Electric Range Spring Showing" with a slogan contest as one of its advertising features. Newspaper space and special window displays are being used.

Six \$100 purchase certificates—one each week—are being given to writers of the best 10-word advertising slogans. Judges are Eugenia Fischer, director of the home service department of Portland General Electric Co.; Edward D. Smith, president of the Advertising Club of Portland, and Berkeley Snow, secretary of the Northwest Electric Light & Power Association.

Participating dealers are: George E. Allen Hardware Co., Good Housekeeping, Inc., C. S. Hamilton Furniture Co., Hogg Bros., Imperial Furniture Co., Nelson Bros., Inc., Montgomery Ward & Co., Sears, Roebuck & Co., H. L. Stiff Furniture Co., and Yeater & Rush Co., all in Salem, and Ames Hardware and Furniture Co., and H. L. Stiff Furniture Co., Silverton, and P. N. Smith Furniture Co., Mt. Angel.

Westinghouse Issues Range Sales Manual

EAST PITTSBURGH, Pa.—Two new electric range sales helps, a manual titled "How to Sell Westinghouse Kitchen-Proved Electric Ranges" and a "proof book" containing results of the Westinghouse national range kitchen-proving survey, have been issued by Westinghouse Electric & Mfg. Co.

The manual contains product information, the complete 1938 sales story, selling plans and technique, prospecting plans, testimonials, and electric cooking questions and answers.

The proof book, designed particularly as a sales closer, contains results of tests in typical kitchens throughout the country and statements of cooperating housewives.

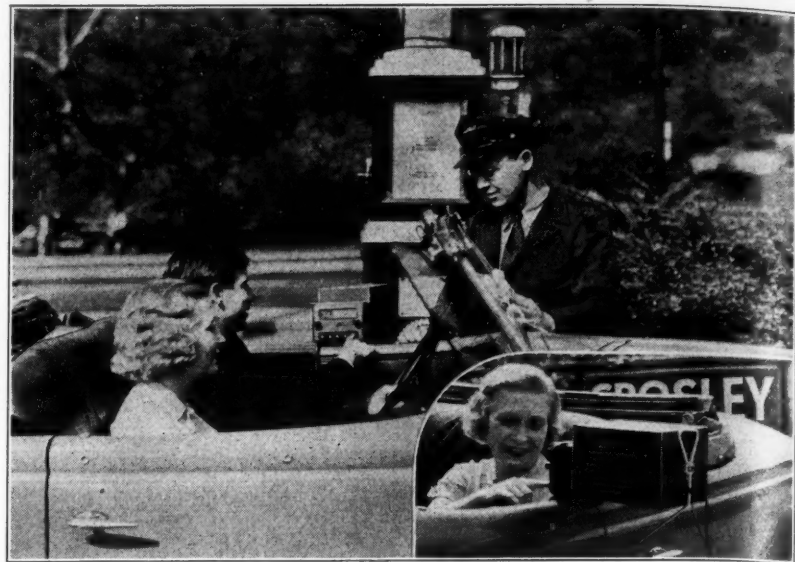
Also included in the book are itemized operating costs, current consumption, estimated savings, and other pertinent facts.

Dishwasher Sales Primer Given In Narrative Form

CLEVELAND—A narrative sales primer, written to make dishwasher and disposal sales instruction interesting, has been prepared by the specialty appliance sales division of General Electric Co.

Entitled "Red Jenkins," the electric sink primer presents the story of a dealer who made a comeback. Product and sales instruction is introduced in association with the plot.

Radio Demonstration While You Wait



Crosley has adapted the "wayside lunch" idea to car radio demonstrations. Motorists now may be entertained (and given a demonstration) in the filling station while having their cars refueled, oiled, or otherwise serviced. The push-button set is clamped onto the car door with rubber-covered brackets, and the driver selects his own program. If the "self-selling" idea brings an order, the set, being self-contained, can be installed on the spot by the filling station attendant.

G-E 1938 Laundry Line Has New 'Wrinkles'

BRIDGEPORT, Conn.—Five wringer-type washers, two spin-basket washers, three rotary ironers, and an automatic flatplate ironer comprise the new "White Line" just made available to dealers throughout the country by the home laundry equipment section of General Electric Co., reports David Hays, commercial engineer for G-E home laundry equipment.

The five new wringer-type washers range in capacity from 6 to 9 lbs., and all are equipped with the new one-control wringer, which can be placed in eight different positions. A single control bar operates the entire wringer, starting and stopping the rolls, applying and relieving pressure, and, on most models, offsetting the upper roll to permit easier feeding of clothes, says Mr. Hays.

Most of the washers have a bottle-neck tub, made of special enameling iron and mounted on rubber. Smaller capacity models have a semi-cabinet design, with modernistic flared and ribbed legs and skirt of pressed steel, concealing and protecting all mechanism.

The 9-lb. model has a steel skirt finished in white with a black toe-board extending to within 3 inches of the floor. All wringer-type washers feature the activator and the permadrive mechanism. The latter has four moving parts, and is permanently lubricated at the factory.

Washers are powered by a 1/4-hp. G-E motor, running in a casing of live rubber with endplay silencers, and sealed in a special lubricant at the factory.

Fast-emptying spin basket removing water by centrifugal force and thus damp-drying clothes is featured in both of the new double-tub washers. Light-weight clothes may be taken directly from the spin-basket and ironed without further drying, it is claimed.

The rotary ironers are designed to allow steady applications of the shoe to the roll for pressing without the roll turning. Adjustable thermostatic control is provided in the rotary ironers and in the new automatic flatplate ironer.

The latter has a console cabinet, the top of which can be used as a work surface or can be transformed into shelves during the ironing period.

Shoe of the automatic flatplate is of polished aluminum and has an ironing surface of 300 sq. in. By pulling the "Textolite" handle control, the shoe can be brought completely above the ironing buck, making contact with the motor and applying pressure automatically through the patented thruster, heart of the device.

The handle control also is the means of disconnecting the motor and relieving pressure.

A moisture trap collects steam driven through the padding and accumulates it in a removable glass receptacle. Flexible mounting of the buck allows for alignment with garments of uneven thickness.

A new ruffle iron is available for use on ruffles and small garments. This accessory iron draws its heat from the ironer shoe, and can be

pushed inside the shoe when not in use.

Heating elements in the flatplate ironer are of the Calrod type. Two thermostats provide individual temperature control for each end of the shoe.

A hard steel chromium shoe moves the roll on the rotary ironers, and shoe and roll are controlled by a knee lever and a finger-tip lever. Steady application of the shoe to the roll without the latter turning is allowed by a control on the mechanism case.

Advertising Agency Buys All-Electric Kitchen

SAN FRANCISCO—An all-electric kitchen has been installed in the offices of Botsford, Constantine & Gardner, advertising agency here, to provide research work and advisory service for food advertiser clients and to enable the agency to do goodwill entertaining.

Under the direction of Miss Ella Lehr, former home economist for the San Francisco Call-Bulletin and the Pacific Gas & Electric Co., the kitchen department develops new recipes using products of nationally-known food manufacturers and packers, releases home economics publicity, handles food photography preparations, and provides the "cold cream slant" on food products.

Said to be the only advertising agency kitchen of its kind west of Chicago, the Botsford, Constantine, & Gardner kitchen is equipped with refrigerator, range, dishwasher, mixer, and other appliances, and has a breakfast nook for buffet service to visitors.

Uniform COMPRESSOR CASTINGS

For nearly a million refrigeration and air conditioning units have been produced by Nelson in the past five years. If your compressor specifications call for QUALITY castings,

Let us quote!

NELSON BROTHERS CO.
SAGINAW, MICHIGAN

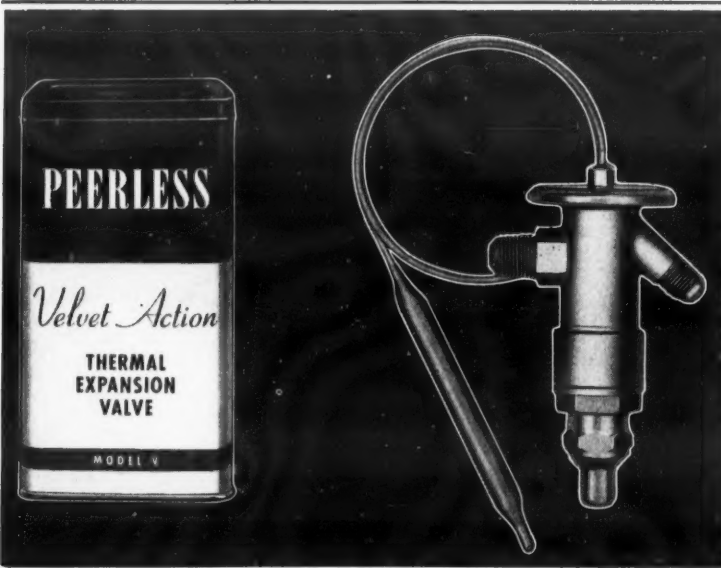
Anaconda Copper Refrigeration Tubes

Unusually long lengths!



THE AMERICAN BRASS CO.
FRENCH SMALL TUBE BRANCH
General Offices, Waterbury, Conn.

THE BUYER'S GUIDE



The New Model V PEERLESS THERMAL EXPANSION VALVE

Velvet Action

Here's something new in Thermal Valves—Velvet Action. It's a smoother, steadier opening and closing of the orifice—a smoother, steadier feeding of refrigerant. Only Peerless Model V has Velvet Action!

Safety Sealed

This valve is Safety Sealed in a Tamper Proof metal container. That's your guarantee that the valve reaches you in the same condition it left the factory—your guarantee that it's a genuine Peerless Model V Valve.

PEERLESS of AMERICA, Inc.

Established 1912 As The Peerless Ice Machine Co.
Main Factory—General Offices
515 West 35th St.—Chicago
New York Factory Pacific Coast Factory
43-20 34th Street 3000 S. Main Street
Long Island City Los Angeles

EVERYTHING YOU NEED FOR Profitable Volume

Get additional profitable volume without extra overhead by selling PELCO beverage and beverage-food coolers! PELCO is "package-type"—simply plug it into any light socket. Your present salesmen can sell it to taverns, hotels, bowling alleys, restaurants, dairies—or any place that sells bottled beverages. There's a complete line, smartly finished in modern Pelco red baked enamel with stainless steel trim and chrome-plated hardware. Super-powered PELCO gives unequalled performance—precision manufacture for trouble-free long life—and full factory protection and help, backed by national advertising.



See Your RANCO JOBBER

REPLACE with Ranco Controls - - - and make more money on Household Refrigerator Thermostat service calls. Ranco leads the world in Exact Replacement Controls. Thirty-two models. Ten General Replacements.

Your Ranco Jobber is headquarters for precision controls of highest quality. He is at your service - - - with a complete stock of genuine Ranco Controls.

Ranco INC.,
Columbus, Ohio, USA

Engineering

Operating Cycle Of Centrifugal Machines And Auxiliary Equipment Used

BY F. O. JORDAN

This is the concluding installment of an article dealing with centrifugal refrigerating systems, first part of which was published in last week's issue of the News.

The entire centrifugal unit (shown by Fig. 1) consists of the centrifugal compressor, condenser, float valve, evaporator, and auxiliaries, all being mounted on one base as a single refrigerating unit.

The refrigerant vapor is drawn from the evaporator into the compressor where it is compressed in two or more serial stages. Next it goes into the shell of the condenser where it is liquified by the condensing water circulating through the tubes. Several passes are provided to increase the velocity of water, thus increasing heat transfer. The shell is usually of steel; the tubes are of brass or Admiralty metal.

After being condensed, the liquid refrigerant drops to the well where its level is regulated by the float valve. Passing through the latter the pressure drops, resulting in generation of some flash gas, and in cooling the rest of liquid to the proper level.

Through a special connection the refrigerant flows to the bottom of the evaporator, which is of shell-and-tube type. By means of one or more liquid pumps the refrigerant is lifted to the top of the evaporator. Through the holes in a special distributing plate it is spread over the tubes through which passes the medium to be cooled or condensed. It is then

evaporated and returned to the suction of the compressor, thus completing the cycle.

The shell usually is of steel, while the tubes may be either of steel or brass, depending on the kind of medium handled. A multi-pass arrangement of the flow of the medium usually is provided.

Peripheral speeds range from 400 to 600 feet per second, which, in light of the information given under

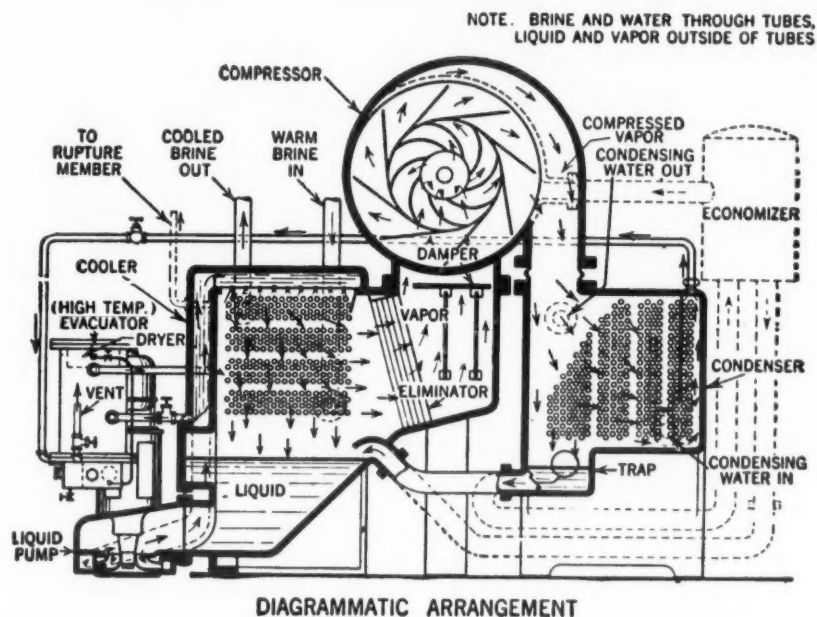
compressor, and increasing the capacity as well as the efficiency of the whole machine.

The Air Evacuator, which is provided to remove air and other non-condensable gases that might get into the machine and to separate and remove water that might get mixed with refrigerant. In its action it is to some extent similar to the conventional type of the air purger used on the old ammonia system.

RECOVERY SYSTEM

The Recovery System, which is provided to recover the traces of refrigerant which will be present in air after it is concentrated in the evaporator and before it is discharged into the atmosphere. It consists of a small auxiliary compressor and water condenser where high pressure is maintained (80 pounds). Because of the high partial pressure of air maintained in the condenser, almost pure air finally is discharged. The recovered refrigerant is returned back to the machine.

Fig. 1—Centrifugal Unit



the general discussion, is quite safe, being much below the critical speed of the rotating system.

In terms of revolutions per minute, the speed of the compressors range from 3,500 to 6,000 r.p.m. depending on the size of the unit. This speed range makes it suitable for direct coupling to a steam turbine.

NUMBER OF STAGES

The number of stages in the standard Carrier centrifugal machine is from 2 to 4, 2 stages being used for high suction temperature, 3 and 4 stages for lower suction temperature.

With 4-stage machines at the temperature of city water of about 70 to 80° F., the suction temperature may be as low as 0° F. and less. If well water of about 55° F. is available, the suction temperature of this machine is correspondingly lower, say -20° F. to -30° F.

By adding more stages in series with the basic compressor unit (termed "cascading"), the suction temperature can be brought down to -100° F. and lower.

The tonnage of the smallest practicable unit depends on the suction temperature required. For high-temperature jobs (suction temperature of about 40° F.) the minimum size of the centrifugal unit is about 60 to 70 tons of refrigerating effect. As to the highest tonnage yet available in one unit, 850 tons and more are easily obtained.

CAPACITY REGULATION

Regulation of the machine capacity is done either by changing the rotative speed, or by changing the condensing water flow. The most efficient way is by changing the speed of the compressor. In actual practice, the capacity is generally regulated first by changing the speed and then, if closer regulation is required, it is obtained by throttling the condensing water to the compressor.

The following auxiliaries are used with the Carrier machine.

The Economizer, which is a receiver connected with the condenser and with some intermediate stage of the compressor. The pressure in the Economizer is equal to that of this intermediate stage. A great part of the flash gas is, therefore, returned to the Economizer, bypassing the evaporator and lower stages of the

Lubrication System consists of an oil pump driven from the compressor shaft with the valves and piping necessary for oil distribution and regulation. In the latest development, the system is almost entirely internal.

The Seal against atmosphere on the drive side of the shaft is of a bellows type, operated by the pressure of oil from the lubrication system. When the machine stands still, the seal is maintained by the pressure of contact between two ground metallic surfaces. When the machine operates, the seal is maintained by oil film pressed in between those surfaces.

Control and Safety Devices. The machine is equipped with various control instruments which permit manual or automatic control of operation regarding delivered tonnage, temperature of brine leaving the cooler, temperature or pressure of saturation in case of condensing gases, etc.

REFRIGERANT USED

Refrigerant used is called "Carrene No. 2"; its chemical formula is CFCl_3 (Dichloromonofluoromethane). It has a reasonably high specific volume, therefore, the minimum tonnage obtained is reasonably low.

The working pressures are very low both on the condenser and evaporator sides, being around atmospheric pressure on the high side, and vacuum on the low side.

Its boiling point is nearly 75° F., which makes it easy in handling at the room temperature even in open drums or containers. It is physiologically harmless, non-inflammable, and of high thermodynamic properties. It is non-corrosive in absence of water.

Industrial Medicine Group Meets In Chicago June 6

CHICAGO—Twenty-third annual meeting of the American Association of Industrial Physicians and Surgeons will be held concurrently with the midwest conference on occupational diseases at the Palmer House here, June 6 through 9.

Preventive medicine will be the keynote of the meeting, and the sessions will be open to any practicing physician.

Data On Piping Systems Offered In Bulletin

PITTSBURGH—A. M. Byers Co., metal products manufacturer, has added a new booklet entitled "Wrought Iron For Piping Systems" to the library of engineering bulletins prepared by its engineering service department.

Discussed in the book are pipe materials, costs, pipe selection, why some metals resist corrosion better than others, water supply, drainage, heating and power systems, and installation procedure.

The appendix lists suggestions for reducing the effects of corrosion on piping systems.

New Machine To Measure V-Belts In Operation

AKRON, Ohio—An automatic machine to measure V-belts while the belts are running on pulleys under operating tension has been developed by engineers of B. F. Goodrich Co.

To be tested, a belt is placed over two pulleys on the machine, the pulleys then being adjusted to provide normal tension. A dial on the machine registers 50, representing the nominal length of the belt.

As soon as the machine starts, the dial will register less than 50 if the belt is under nominal length, or over 50 if the belt is over nominal length.

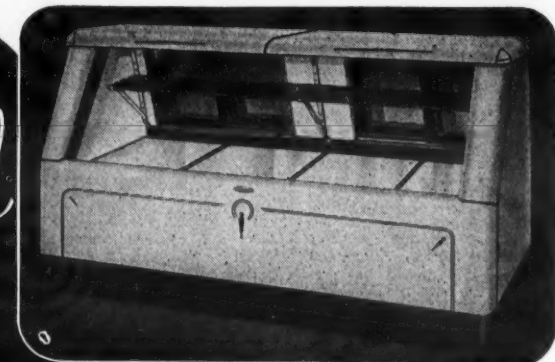
Each point under or over 50 represents a tenth of an inch.

THE BUYER'S GUIDE

NEW Percival STREAMLINER!

DISTRIBUTORS WANTED!

Write for details of Profit-making franchise. Complete PERCIVAL line meets every requirement of the modern food store.



Modern styling . . . Beautiful design . . . Outstanding construction . . . Economical operation! TOMORROW'S case, presented TODAY! Get the jump on other distributors by selling this modern marvel of electrical refrigeration. Its NEW style and NEW features give you exclusive selling advantages! NEW PERCIVAL FINANCE PLAN HELPS YOU SELL.

C. L. PERCIVAL COMPANY
DES MOINES IOWA
52 YEARS OF SERVICE 1886-1938

TYLER WELDED STEEL REFRIGERATORS



A COMPLETE NEW LINE FOR 1938

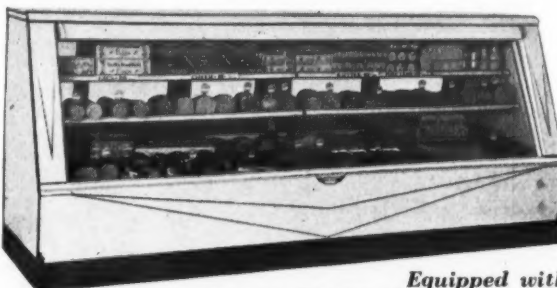
Fastest selling line ever offered to the trade. Completely covers the field. Pace-setting values in Top Display and Double Duty Cases—6, 8, 10 and 12 foot lengths. Two shelf cases. . . Delicatessen cases. . . Reach-In Boxes. . . Walk-In Coolers. All streamlined with striking modern beauty and engineered with latest improvements.

With this new Tyler line of commercial refrigerators you can step out ahead of all competition. Write today for free literature and attractive dealer proposition.

TYLER FIXTURE CORP. Dept. R, NILES, MICH.
NEW YORK OFFICE, 801 W. 28th St. CHICAGO OFFICE, 1083 W. Ogden Ave.



KEEP YOUR PROFITS!



and - -
WIN GREATER GOOD WILL

Equipped with Famous FOGEL Lifetime Vision.

FOGEL distributors need not spend excess time and money on frequent service calls. FOGEL equipment is built for perfect performance with little attention. This means ASSURED SATISFACTION for the owner and PERMANENT GOOD WILL for the dealer.

Inquire today about our complete line of refrigerated Food Storage and Display Equipment.

Interesting Distributor Proposition to Qualified Firms.

FOGEL REFRIGERATOR COMPANY SINCE 1899
16th & Vine Sts., Phila., Pa.

MANAGER WANTED
Corporation engaged in foreign manufacturing plans to enter domestic and commercial refrigeration and air conditioning fields in foreign countries and expects to employ capable manager for supervision of manufacturing and merchandising abroad. Must be qualified to take full charge. Confidential treatment of applications addressed to Box 1042, Air Conditioning & Refrigeration News.

Dayton V-BELTS
Silent, vibrationless, dependable, long-lasting. Powerful grip prevents slippage. A nearby distributor carries a complete stock for appliances and machines.
THE DAYTON RUBBER MFG. CO., DAYTON, OHIO
World's Largest Manufacturer of V-Belts

LINDERME SEAMLESS TUBING
Sealed AND Dehydrated
LINDERME TUBE COMPANY
CLEVELAND OHIO, U.S.A.

Economizing Radiator Used In Blower Unit

HUNTINGTON, Ind.—A new furnace blower unit which incorporates an economizing radiator has been announced by the Majestic Co. here.

Known as a "super-heater blower unit," the new device contains a radiator, filters, and blower unit. Installed at the rear of a warm-air furnace and connected to the smoke-pipe outlet, the blower draws cold air over 44 sq. ft. of heating surface, and then introduces the tempered air at the base of the furnace in the conventional manner.

The blower has a capacity of 1,600 c.f.m., and three standard filters are used. The casing has a blue crackle finish.

York Gets Contract For Houston Job

HOUSTON, Tex.—York Ice Machinery Corp. has been awarded the air-conditioning contract for Houston's second tallest skyscraper, the Neils Esperson building. Complete air conditioning will be provided for 27 floors, the work to cost about \$350,000. Charles Leopold, Philadelphia, is engineer for the project, and John Ebersson, New York City, is the architect.

Sub-contracts were let to Alan T. Cooke Electric Co., Houston, for electrical work; Marley Co., Kansas City, Mo., cooling tower; and American Construction Co., shaft, cutting, and patching.

Reports From Department Stores Show How Air Conditioning Boosts Sales

WASHINGTON, D. C.—In a drive for bigger shares of their community business during increasingly competitive times, department stores throughout the country are making larger use of air conditioning to a constantly greater extent, reports William B. Henderson, executive vice president of Air Conditioning Manufacturers Association.

Reports from 103 utilities operating in sections totaling 50,000,000 population reveal that in their zones 138 department stores were air conditioned in 1937, representing 2.07% of the units installed in the districts and 12.64% of the horsepower placed in operation there for air conditioning. In the same areas, department store installations were 1.59% of the units and 15.74% of the horsepower in 1936, and 2.34 and 14.27% in 1935.

Another survey shows that in the case of 110 utilities, department store installations averaged one for every utility in 1935, and one and one-fourth in 1936, and one and one-half in 1937.

"Of all the varieties of establishments using air conditioning as a business aid, department stores are the most consistent in its extension throughout their buildings," Mr. Henderson said.

"One principal reason assigned for the success of department stores with air conditioning, and the general progress of this class of retailer toward an early saturation of the market, is the fact that they have given much thought to ensuring the correct designing of systems and selection of equipment, so their installations are most likely to be outstanding examples of correct application of units to the work that must be accomplished.

"Department store adoption of air conditioning has been characterized by use of both expert engineering counsel and the equipment of reliable, well-known companies.

OVER 700 HAVE IT

"More than 700 department stores now have air conditioning, complete or in part, with a steadily increasing trend toward full equipping at the outset, based on observation of results accomplished in other establishments. Adoption is not confined to stores in cities of any particular population classes, installations ranging from New York City and Chicago to such localities as Fort Collins and Greeley, Colo., Emporia and Manhattan, Kan., Cumberland, Ky., Newburyport, Mass., and Denison, Tex.

"One principal question is asked by prospective department store users of air conditioning. This is: 'Is it a customer convenience or a business builder?' The answer is that it is both. A store that air conditioned its fur department made a spectacular sales increase in one hot month, when women otherwise could not have been induced to enter the department.

HELPS ADJACENT DEPTS.

"Air conditioning a basement restaurant not only brought a sharp increase in its business but also boosted sales 50% in the adjacent departments. The Emporia store that added air conditioning reported 10 to 20% increase in all sections, and said that savings in preventing perspiration damage were 'almost incalculable.'

"One great stimulant of air conditioning in the department store field has been its wide adoption by department chains and also the chains in the specialty lines. Extension among such stores reveals to other merchandisers that air conditioning has had its test under important auspices in demonstration spots and has won out, and it also serves to reveal air conditioning's competitive pulling power in drawing away various profitable elements of the department stores' business.

THE TWO BIG BENEFITS

"Air-conditioned department stores seem to agree that two results are outstanding. Store traffic is stimulated—and manifestly women who don't enter a store can't buy there—and sales are increased most sharply in the sections where comfort is a prime consideration, as in beauty salons, tea rooms, and restaurants, and at soda fountains, and where customers require leisure for selec-

tion and respond to the intelligent exercising of the higher degrees of salesmanship, as in garment lines, millinery, furs, furniture, carpets, and rugs.

"There is quite general agreement also that air conditioning a department store increases customer traffic, lengthens selling seasons in given departments, defers markdowns, and lessens both the size of them and the necessity for them, reduces delivery and return costs by being an aid to satisfied selecting in the first place, increases salespersons' efficiency and health, and cuts decorating, cleaning, and janitor costs.

CONVERTS WASTE SPACE

"Frequently its price is justified in only one or a few of these elements, or in the fact that air conditioning makes comfortable, usable space out of what was unattractive waste area.

"Year-around air conditioning, it should be pointed out, is the objective toward which the department store field generally is working. Maintenance of proper temperature and humidity conditions in winter is fully as desirable as summertime comfort conditioning, owners of year-around equipment are convinced, and protection of stocks from soil and soot damage is just as necessary in December, for example, as it is in July. Department stores in towns as small as Grand Island, Neb., have adopted year-around equipment."

In Kline's, Kansas City, Mo., current installation of an intricate air-conditioning system for year-around service is giving a graphic example of the exacting requirements being placed on today's equipment.

A SUPER SYSTEM

The system will serve the entire selling space, the offices, lunchroom, and other facilities used by employees and much of the storage space, which means that from one central plant there will be air conditioning of two completely occupied Kline buildings on one street, a third on another, upper floor areas in a fourth, and the upper floors and basement in a fifth structure. The system will cost \$200,000, and will be installed without interruption to nor-

mal shopping activities anywhere in the layout.

Department store air-conditioning activities inaugurated, enlarged, or completed in the past few months include an extensive project at Oppenheim, Collins & Co., Brooklyn; completion of a 5,000-ton job for the J. L. Hudson Co., Detroit, outgrowth of a small test installation a decade ago; Loveman's, Inc., and Miller Brothers, Chattanooga; J. J. Newberry Co., Phoenix, Ariz.; complete conditioning of the John Shillito Co. six-story main building and seven-story new addition, Cincinnati, together with part of its new 10-story customers' garage and service quarters.

H. & S. Pogue Co., Cincinnati; progress in a great year-around system for Gimbel's, Philadelphia; F. W. Woolworth Co.'s new Fifth Ave. store, New York City; Woolf & Marx Co.'s eight-story building, San Antonio; Joseph Horne Co., eight stories, Pittsburgh; Rich's, Inc., seven floors, Atlanta; J. Goldsmith & Sons Co., Memphis; Neiman-Marcus Co., Dreyfuss & Sons, La Mode, Popular Dry Goods Co., Volk Brothers Co., and Titche-Goettinger Co., all in Dallas, Tex.; Ellis Stone & Co., Durham, N. C.; The White House, five floors and annex, and S. H. Kress Co., El Paso, Tex.

James F. Condon & Sons, Charleston, S. C.; Madigan Brothers, Chicago; J. C. Penney & Co. and Ward's, Houston, Tex.; Levy Brothers, Louisville, Ky.; Phil A. Halle Co., Memphis, Tenn.; Hammel's, Mobile, Ala.; Coplon-Smith Co., New Bern, N. C.; Mark Isaacs Co., New Orleans; Halliburton's and Davis Brothers, Oklahoma City, Okla.; Rutland's, St. Petersburg, Fla.; Cox-Rushing-Greer Co., San Angelo, Tex.; S. H. Kress Co., Tulsa, Okla.; Goldstein-Migel's, Waco, Tex.; and Lansburgh's, Washington, D. C.

New Construction Used In 'Permo' Filter

CHICAGO—A new throw-away air filter, known as the "Permo" and said to be flame-proof, has been announced by the Independent Air Filter Co. here. Available in standard sizes, the new filter is said to be highly efficient, due to the progressive packing of the filtering element.

This type of pack utilizes a coarse filtering medium on the face of the filter, and fine, densely packed fibers on the rear or exit side.

THE BUYER'S GUIDE

OF COURSE!

That flared tube fittings "Make-Up" with-out trouble is today accepted as a matter of course—just as natural as that Thursday follows Wednesday. Yet the orderly processes by which fittings are fabricated involves an immense amount of equipment, specialized training and the actual knowledge of refrigeration problems that comes only from long experience.

Of course, Commonwealth Flared Fittings are "Seepage-Proof." Every thread is carefully produced, each seal is accurately cut; and every fitting is as dependable as modern equipment and engineering skill can make it.

Ever since the birth of automatic refrigeration Commonwealth has stood shoulder to shoulder with leaders in the industry, providing a reliable source of fittings BUILT RIGHT TO STAY TIGHT.

Throughout the years the trade has come to accept the excellence of Commonwealth Fittings as a matter of course.

For information on standard, semi-standard and special fittings consult Commonwealth.

COMMONWEALTH BRASS CORPORATION

Commonwealth at Grand Trunk R. R.
DETROIT, MICH.

OIL-FREE GASES with AMERICAN INJECTOR OIL SEPARATORS

Prevention of oil seepage to condenser, liquid receiver, and evaporator is necessary for efficient operation of any low-side. Oil should be returned to compressor crankcase where it performs its most useful service.

With the installation of American Injector Oil Separator, it is impossible for oil-laden gases to contaminate evaporators or plug up expansion valves and expansion coils.

Thousands of separators in constant use attest their efficiency—years of experience confirm the essential soundness of their design. A development of intense interest is the waterproof coating to insure against exposure to low slip-stream temperatures, maintaining gas temperatures, avoiding condensation of refrigerant within the shell.

American Injector Oil Separators come in a wide range of sizes. At your favorite jobber.

AMERICAN INJECTOR COMPANY
1481 Fourteenth Avenue DETROIT, MICHIGAN

FOUND

THE WAY TO KNOW WHAT'S GOING ON BEHIND THAT CLOSED DOOR

As every service man knows, the only true story of refrigeration temperature is told under actual working conditions with the refrigerator door CLOSED. That's why the old-fashioned pocket thermometer has had to make room for this Marsh "Serviceman" with its easily read dial and generous length of capillary tubing for reaching the real point of testing. You don't guess when you use the—

MARSH "Serviceman"
REFRIGERATION SERVICE THERMOMETER

The illustration tells the story of this ruggedly built instrument. It is guaranteed accurate within one degree. It has the Marsh "RECALIBRATOR" which makes it possible to reset it as easily as you would adjust a postage scale. Volume production permits selling this finely built instrument (in ranges of -10° to 65° or -10° to 100° F.) \$5.00 (Minus 20° temperature range at slight added cost.) f.o.b. Factory

JAS. P. MARSH CORPORATION
2067 Southport Avenue, Chicago, Ill.

MARSH Refrigeration Instruments
GAUGES—THERMOMETERS—RECORDERS—MERCURY SWITCHES

THE BUYER'S GUIDE

OUR MASTER LINE	OF REFRIGERATORS
MASTER 4 \$60.00 MASTER 5 \$70.00 MASTER 6 \$75.00 F. O. B. New York	EXTERIOR —High temperature baked DuPont Dulux; INTERIOR —Acid Resisting Porcelain on Armo Iron; 16-Point Temperature Control—Large Ice Capacity—Automatic Reset Electric Cutout—No fuse; Famous "Life-Time" Current-Saver—Compressor Unit—Double Depth Freezing Space—Round Bar Shelving; Crystal Defrosting Tray; Attractive Striped Evaporator Door; Electric Light.

FEDERAL REFRIGERATOR CORPORATION 57 EAST 25TH STREET NEW YORK, N. Y.

THE NEW 1938 C-B KOLD-O-MATIC
Display Cases & Refrigerators
Fulfill Constantly Increasing Demands For

- MORE DISPLAY
- MORE EYE APPEAL
- PROPER TEMPERATURE
- PROPER HUMIDITY
- PROVEN CONSTRUCTION
- PROVEN QUALITY

EXCLUSIVE TERRITORIES AVAILABLE FOR QUALIFIED DISTRIBUTORS

THE CINCINNATI BUTCHERS SUPPLY CORPORATION
CINCINNATI, OHIO

Equipment and Compressor sales go together. Sell both on one contract.

The Sherer Franchise Offers:

- ★ COMPLETE LINE OF CASES, COOLERS AND BOXES.
- ★ NEW EQUIPMENT constantly under development, opening new fields for compressor sales.
- ★ LAYOUT DEPARTMENT—layouts for store modernization programs without obligation.
- ★ ADVERTISING—Sherer Equipment advertised by mail and in leading trade publications.

SHERER-GILLET CO. Manufacturers of Refrigerated Display and Storage Equipment

PROFIT WITH Sherer CASE and COOLER FRANCHISE

Write for catalog and franchise details, mentioning territory desired

C. A.

RATE light-fac addition consec words to PAYM advertis No sh ing De Ave.

UNUS district s enced a selling r cers and to repre turer wh with exc in the in prices, al which is every se consider of distr following State (2) (3) Nor Ohio (4) Applic present c tribution compensa 1938, Air News.

SALES 1 distribut refrigerat have thon with a p and a bu first lette Building.

AUTOMA search at sign. Exe refrigerat valves. I weather v ential on successfu ments vo furnish r and scrup Irish fam gent wor view. R. Maplewoo

FE DISTRI developed refrigerat than \$300 parts incl Just plu porcelain shelves. S Easy to Good disc literature. EQUIPME Bronx, N.

COMPLE cases, wa for meat etc. Sell sors, or v Attractive arrange business. catalog. MFG. CO.

INTERES 1/2 and 1/2 or used 12 type. FED 37 East 2

WANTED inghouse want to stock on shipments you have MAJESTIC PARTS SI

EQ COMMERC air, Cope Special lo units not slight chan to full cal tional.) CORP., 57

FOR SAL Delco mot rubber m volts and \$5.00; 1/2 h volt moti tions. Ab sale. INV CORP., 96 GRamercy

DOMESTIC pencil \$1.25 Electric Bishop Bal \$2.00; Pen years. O UNITED S INC., 438 V

100% SAT Hermeti inghouse— Our succe refrigerat trated effo Customers sealed unit in the past ment for

CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, \$2.00, additional words four cents each. Three consecutive insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning & Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

UNUSUAL OPPORTUNITY for four district sales managers. If you are experienced and have successful record in selling refrigerator display cases to grocers and markets and want an opportunity to represent a long established manufacturer who is putting out a complete line with exclusive selling features, unmatched in the industry, at thoroughly competitive prices, and a newly developed display line every section of the country, we will consider your application for the position of district sales manager in one of the following territories: (1) Upper New York State (2) New York Metropolitan District (3) Northwestern Pennsylvania—Eastern Ohio (4) Eastern Pennsylvania.

Applicants must be able to supervise present dealers and expand present distribution set-up. Positions carry liberal compensation proposition. Address Box 1948, Air Conditioning & Refrigeration News.

SALES ENGINEER calling on jobbers, distributors, and dealers of commercial refrigeration in East and Southeast. Must have thorough knowledge of refrigeration with a past record of honesty, integrity and a business producer. Give full details first letter. BETZ CORPORATION, Betz Building, Hammond, Indiana.

POSITIONS WANTED

AUTOMATIC CONTROL Engineer—Research and development, application, design. Executive ability. Air conditioning, refrigeration, thermostatic and magnetic valves. Heating specialties, cycling and weather varied space heating and differential office systems. Long line of successful and money making developments vouch for inventive ability. Can furnish record of unquestioned honesty and scrupulous integrity. Age 38, Scotch-Irish family. Impressive personality, diligent worker. Salary discussed at interview. RAY MOORE, 2622 Lyle Ave., Maplewood, Mo.

FRANCHISES AVAILABLE

DISTRIBUTORS WANTED for newly developed, self-contained Midget display refrigerator. The only case listed for less than \$300.00. All nationally advertised parts including twin-cylinder compressor. Just plug in and use. Well insulated; porcelain exterior and interior; three shelves. Size 40" wide, 44" high, 28" deep. Easy to sell wherever food is purveyed. Good discount to distributors. Write for literature. CONTINENTAL FOOD STORES EQUIPMENT CORP., 2697 Third Ave., Bronx, N. Y.

COMPLETE LINE of refrigerator display cases, walk-in coolers, and refrigerators for meat markets, grocers, restaurants, etc. Sell with Ehrlich line of compressors, or with any other line of machines. Attractive discounts, also liberal financing arrangements to help sell. 69 years in business. Write for full information and catalog. EHRLICH REFRIGERATOR MFG. CO., St. Joseph, Mo.

EQUIPMENT WANTED

INTERESTED in purchasing 500 to 1,000 1/2 and 1/4 H.P. refrigeration motors—new or used repulsion induction or capacitor type. FEDERAL REFRIGERATOR CORP., 57 East 25th St., New York City.

WANTED for Cash 1,000 GE and Westinghouse defective units. All models. We want to rebuild these so as to have a stock on hand to take care of immediate shipments to our customers. Advise models you have and price. G & G GENUINE MAJESTIC REFRIGERATOR AND RADIO PARTS SERVICE, 5801 Dickens, Chicago.

EQUIPMENT FOR SALE

COMMERCIAL UNITS all sizes, Frigidaire, Copeland, Kelvinator 1/4 to 1/2 H.P. Special lot model K Frigidaire 1/2 H.P. units not rebuilt—\$12.50, less motor. With slight change this model can be converted to full capacity 1/2 H.P. (Crating additional). FEDERAL REFRIGERATOR CORP., 57 East 25th St., New York City.

FOR SALE: Several hundred brand new Delco motors. Late model capacitor type rubber mounted. Prices: 50 cycles, 110 volts and 220 volts, 1/4 h.p.—\$4.50; 1/2 h.p.—\$5.00; 3/4 h.p.—\$5.50. Also other cycles and volt motors. Order early for best selections. Above motors are subject to prior sale. INTERSTATE REFRIGERATOR CORP., 96 Fifth Avenue, New York City, GRamercy 7-6731.

REPAIR SERVICE

DOMESTIC CONTROLS repaired. Ranco pencil \$1.75; Ranco box \$2.00; General Electric \$2.00; Cutler-Hammer \$2.00; Bishop Babcock \$2.00; Majestic \$2.00; Tag \$2.00; Penn \$2.00. In business over 20 years. Our name is our guarantee. UNITED SPEEDOMETER REPAIR CO., INC., 436 West 57th Street, New York City.

100% SATISFACTION GUARANTEED—Hermetic rebuilding service. G.E.—Westinghouse—Majestic—U. S. Hermetic—etc. Our success in rebuilding sealed units is founded on these facts—10 years in the refrigeration industry—5 years' concentrated effort on hermetically sealed units. Customers in 37 states had hermetically sealed units rebuilt or exchanged by us in the past year. Complete factory equipment for precision rebuilding. One year

guarantee on all rebuilt units. Exchange service available on most makes and models. Write for prices and descriptive literature. REX REFRIGERATION SERVICE, INC., 2226 S. State St., Chicago, Ill.

CONTROLS REPAIRED. You profit by our ten years' experience, trained personnel, and precision equipment. Each control accurately calibrated and re-finished. Perfect work, prompt service, reliable guarantee. If it contain a bellows, Haletric can repair it. Try Warrenol for stuck compressors. Samples available. HALETRIC LABORATORY, 1793 Lakewood Road, Cleveland, Ohio.

MAJESTIC UNIT Replacements—The only original direct factory Majestic replacements. Guaranteed 18 months in writing. All models \$30.00. Immediate delivery from our stock of 2,000 units. Also G. E. and Westinghouse rebuilding guaranteed 18 months from \$30.00 up. Largest rebuilders of Hermetics in the world. G & G GENUINE MAJESTIC REFRIGERATOR AND RADIO PARTS SERVICE, 5801 Dickens, Chicago.

MISCELLANEOUS

WANTED: DISTRIBUTORS for the National Market Index of Trade-In Values. This book contains over 1,200 different models and illustrations, consisting of every nationally known electric refrigerator. Every refrigerator can be easily identified by this book and is a great help to the salesman selling new refrigerators. This book shows definitely the trade-in price of any make refrigerator. Kindly write for all details to HERMAN HANTOBER at 96 Fifth Avenue, New York City.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

QUESTIONS

Manufacturer Of Frozen Malt Machine In N. Y.

No. 3237 (Engineer, New York)—"Reading your news item in reference to frozen malted freezer and I am interested in same.

"Could you supply me with the address of the Frozen Malted Machine Co. As a sales engineer, I have calls to lay out plants that would be interested in this freezer."

Answer: Address the Frozen Malted Machine Co. at 43 East 20th St., New York, N. Y.

Combination Range And Refrigerator

No. 3238 (Dealer, West Virginia)—"Please furnish the following information as soon as possible. Is a combination of an electric refrigerator and a electric range made up in a single unit and intended for space conservation in apartment buildings? If the above units are being manufactured, please furnish names of manufacturers and what other information is available."

Answer: The General Electric Co., Nela Park, Cleveland, and the Westinghouse Electric & Mfg. Co., Mansfield, Ohio, make a refrigerator and range combination for apartment houses.

Story About N. Y. Refrigeration Code

No. 3239 (Dealer, Tennessee)—"The early part of 1937 an issue of the REFRIGERATION NEWS came out with the following article 'City of New York ordinance questioned the right of the dealer to sell open-type refrigerator units containing sulphur dioxide.'"

"This copy has been misplaced in this office, if available please send this to us immediately."

Answer: We believe you have reference to the April 14, 1937, issue in which was published a news story about a possible restriction on the display in department stores of open-type units using sulphur dioxide.

Service Information On Welsbach Units

No. 3240 (Service Company, Wisconsin)—"We have been instructed to write you for information regarding a C-155 Welsbach electric refrigerator. We are interested in knowing what kind of gas is used, how much for a charge, and what pressure to carry, and other such information necessary to put a Welsbach refrigerator in working order."

Answer: A description of the Welsbach refrigerator and service instructions

for the unit are published in Manual No. 3 of the Master Service Manuals for Household Refrigeration. Manual No. 3, published by Business News Publishing Co., sells for \$1.00, and gives service instructions on special types of household refrigeration systems and orphan makes.

'Market Index On Trade-In Values'

No. 3241 (Manufacturer, New York)—"Please advise where I can purchase the 'National Market Index of Trade-In Values for Used Refrigerators.'"

"The article mentioning this index appears on page 14 of the April 13 issue."

Answer: The "National Market Index of Trade-In Values for Used Refrigerators" may be purchased from Herman Hantober, 96 Fifth Ave., New York, N. Y.

Door Gaskets For Frigidaire Models

No. 3242 (Service Company, Ohio)—"Please send me one year's subscription to the News. I would also like to have the 1938 Refrigeration Directory. Advise us the amount and we will send check for same."

"I want some door gaskets for old model Frigidaire, can you give me name of concern selling this, or will they be in the Directory I am ordering."

Answer: You will find the makers of door gaskets listed on page 116 of the 1938 Directory.

Water Bottles For Electric Refrigerators

No. 3243 (Manufacturer's Export Manager, Illinois)—"Would you be so kind as to give us a list of the names of suppliers, preferably producers, of water bottles with faucets attached such as are placed in refrigerators for the storage of cool water?"

"There is some demand for this type of equipment in the export markets, and we should like to know the manufacturers and suppliers in this line."

Answer: Contact the Jeanette Glass Co., Jeanette, Pa.; and the McKee Glass Co., Jeanette, Pa., for water bottles to be used in refrigerators.

You will find a complete list of manufacturers of such equipment in the 1938 Refrigeration & Air Conditioning Directory. This is a 52-page book and costs \$1.00 per copy.

The arrangement, classification of products, and selection of names in this Directory has been made entirely from the viewpoint of the average buyer in the refrigeration and air-conditioning business. The book is an entirely new compilation from start to finish. The products are classified under natural groupings and there is a complete index of all classified products in the back of the book.

Retail Prices Listed In Specifications Supplement

No. 3244 (Manufacturer, Illinois)—"We would appreciate very much your sending us your latest list showing prices and discounts on various mechanical refrigerators."

Answer: Retail prices of 1938 electric refrigerators were shown in the March 9 Specifications Supplement to AIR CONDITIONING & REFRIGERATION NEWS. However, no discounts were included in this tabulation.

Basis Of Operating Cost Figures

No. 3245 (Utility Company, New York)—"On page 19 of the April 20 issue of REFRIGERATION NEWS are quotations pertaining to operating costs of 6-cu. ft. electric refrigerators as submitted by Dr. Philipp:

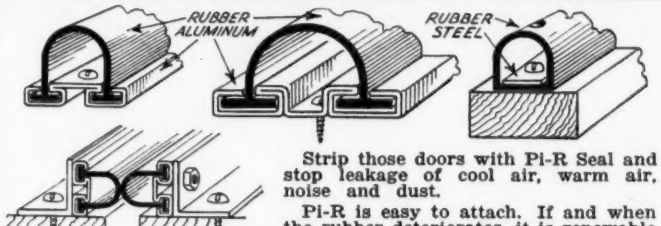
1932.....\$1.95 per month
1934.....1.65 per month
1936.....1.15 per month
1938......65 per month

"We are anxious to obtain the monthly kilowatt hour consumption upon which Dr. Philipp based the above monthly operating costs. If convenient for you to obtain these figures I will indeed be most appreciative, if not, kindly advise your suggestions as to how I should proceed to obtain them."

"I have continued to read REFRIGERATION NEWS and take this opportunity of earnestly commending you for the splendid progress you have made in this field."

Answer: The kilowatt hour figure used is 4.5 cents per kilowatt hour, which is an average figure for the United States, we have learned from Dr. Philipp.

THE BUYER'S GUIDE



Strip those doors with Pi-R Seal and stop leakage of cool air, warm air, noise and dust.

Pi-R is easy to attach. If and when the rubber deteriorates, it is renewable without tools, in a jiffy! Nothing seals like rubber!

Thousands of feet already in use. Distributors in the principal cities. Some territory still open.

G. W. GAIL, Inc.
Industrial Bldg., Baltimore, Md.



Detect This Trouble and You Discover a SURE SALE and NEW PROFITS!

Trouble in the cooler! Dead air spots and freezing zones are impairing foods... Humidity, too high or too low, is causing still more grief... That's the time for the Service Expert to recommend—demonstrate—install Action-Air System.

ACTION-AIR SYSTEM THE BROWN CORP., 616 Bellevue Ave., Syracuse, N. Y.

Action-Air is a patented system of correct air circulation for coolers. A demonstration sells it. Pays its own way through savings. Makes good profits for you and leads to repeat business. Proved in many uses since 1932. Write for our attractive proposition today.



REFRIGERATION AND AIR CONDITIONING PARTS

PROMPT SERVICE

Write FOR OUR LATEST CATALOG ON YOUR LETTERHEAD...

BRANCHES: NEW YORK, CLEVELAND AND ST. LOUIS

THE HARRY ALTER CO., 1728 SO. MICHIGAN AVE., CHICAGO, ILL.

MILLS COMPRESSORS

for Commercial Use

Mills Novelty Company • 4100 Fullerton Avenue • Chicago, Illinois



CHIEFTAIN

QUALITY-BUILT COMPRESSORS and CONDENSING UNITS

The CHIEFTAIN line represents precision manufacture and proven service, and is designed for all domestic and light commercial applications.

Sizes range 1/4 to 1/2 H.P.

Write for prices.

TECUMSEH PRODUCTS CO.
TECUMSEH, MICH.



HENRY CARTRIDGE DEHYDRATOR

Easy to refill as dehydrant cartridge can be readily removed and new unit quickly substituted. Dispersion tube for increasing drying efficiency and minimizing pressure drop is incorporated as integral part of refill cartridge. Strong spring provides positive seal of dispersion tube on inlet fitting, preventing by-passing of refrigerant. Choice of 4 dehydrants at same price.

HENRY VALVE CO. 1001 19th N. SPaulding Ave. CHICAGO, ILL.
Stocked By Leading Jobbers

DRY-EX WATER COOLERS

Shell and Tube Type for Air Conditioning Systems

Direct expansion of refrigerant gas in tubes—Controlled water velocity through shell—

AMMONIA CONDENSERS

Horizontal Shell and Tube Type

Steel pipe tubes or seamless steel tubes—Furnished, if desired, with replaceable tube assembly.

WRITE FOR New Literature

ACME INDUSTRIES, INC. JACKSON, MICHIGAN